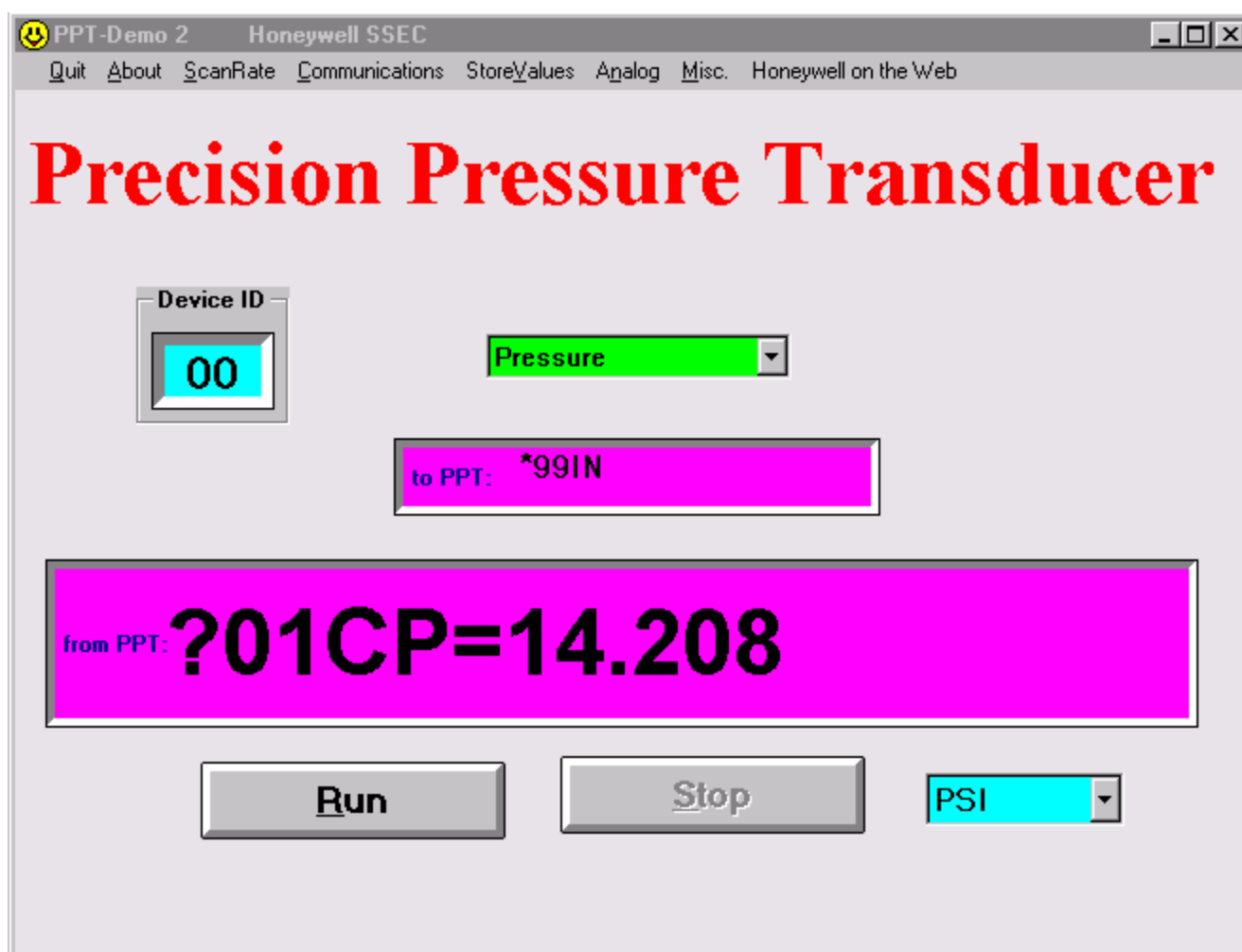


Precision Pressure Transducer

Software Demonstration Instructions



*for IBM compatible computers
running 32-bit Windows™*

Honeywell

Solid State Electronics Center

Demo Notes for IBM Compatibles Running 32-bit Windows“ (WIN95™, WIN98™, NT4™, etc.)

Demo Set-up:

- 1) Quit all currently running applications. The install software cannot upgrade any shared resources that are in use.
- 2) Insert the demo disk 1 into drive A.
- 3) From the Start menu choose Run and type **a:\setup**. You will be prompted to insert disk 2.

Starting the Demo:

- 1) Plug the PPT nine pin connector into a COM port in the back of your computer. If you don't have a connector, refer to the PPT User Manual for electrical connections. Apply power to the PPT.
- 2) From the Start -> Programs menu start PptDemo2.exe.
- 3) The program will first ask you to select the COM port the PPT is connected to. (If you are unsure, try COM1)
- 4) The main screen should appear with the title Precision Pressure Transducer at the top. If this does not, check the PPT COM connection, the power supply connection or try a different COM port.

Running the Demo:

- 1) *The basic layout of the screen is described below.*

A menu across the top of the screen for quick command selection and serial communications control,

A Device ID box displaying the PPT address,

A drop-down select button, displaying Pressure , for more quick command selections,

A box labeled: to PPT : that allows you to type in commands and send them to the PPT ,

A box labeled: from PPT : that displays the PPT command response,

Two buttons, Run and Stop, that operate the PPT in the continuous pressure read mode,

And a drop-down select button, displaying psi , that can change the pressure units of the PPT .

- 2) *There are 4 modes to using this demo and each is described below.*

¥**Mode 1 - Menu Commands:** There are menu commands across the top of the screen - Quit, About, ScanRate, Communications, StoreValues, Analog, Misc., and Honeywell on the Web. These menus offer quick access to several commands. When selected, the command sent to the PPT is displayed in the to PPT: box and the response is displayed in the from PPT : box. The response also appears in a message box that the user needs to reply OK . To reply, click on the OK button or simply press the ENTER key.

 **Note:** A key feature of using the menu commands is the **Communications** menu item. By selecting it you can change the baud rate and COM port.

 **Try It:** Select the **Setup** item from the **Communications** menu. A Set Communications Parameters configuration box will appear. Here are choices to set different baud rates and parity settings. The parity setting for the demo is set to No Parity and can not be changed. Click on OK , or press the ENTER key , to continue.

 **Note:** Another key feature of using the menu commands is the **Misc.** menu item. The **Read Status**, **Power-up Mode**, and **Check EEPROM** items are interpreted in written form from the numeric response from the PPT.

 **Try It:** Select the **Read Status** item from the **Misc.** menu. The response in the from PPT: box might read ?01RS=0000 . The PPT you are communicating with does not have an assigned ID so it identified itself as ?01 . (See ID command for assigning device ID) The PPT response to the read status, RS , command is 0000 . The message box explains the 0000 reply. Press the ENTER key to close the message box.

 **Try It:** Select the **Set Tare** item from the **Misc.** menu. (This is available for Gauge device types only.) A message box will ask you to Set Now or T ype In . Apply some pressure to the P1 port (closest to the edge of the housing). Now click on the Set Now button while holding pressure on the P1 port. Hold this pressure until the cursor turns back to the arrow symbol. This has set the tare to the applied pressure. Press the ENTER key to close the message box.

 **Note:** Setting the tare is similar to setting an offset pressure. An example would be going to the delicatessen and weighing the empty container before filling it. A tare is set to offset the weight of the container so that it is not included in the final weight.

 **Try It:** Click on the **ScanRate** menu. In it you will see seven different pressure output reading rates to select from. The PPT has many more choices than shown here ranging from 0.008 seconds/ sample (120 samples/sec) to 51 minutes/sample. These seven were selected for demonstration purposes. Click on 0.20 to continue.

¥**Mode 2 - Drop-Down Select Button:** There is the drop-down select button where a number of PPT commands can be quickly selected. To select a command, click the mouse on top of this button and use the scroll arrows to view the commands. Click on the command you want and it will be sent to the PPT as well as displayed in the to PPT: box. The PPT response will be displayed in the from PPT: box.

 **Try It:** Click on the drop-down select button and select the **Temp (F)** item. The command sent is shown in the to PPT: box as * 00T3 . The response in the from PPT: box might read ?01FT= 75.4 . The FT indicates Fahrenheit temperature of 75.4 degrees.

 **Try It:** Click on the drop-down select button and select the **Display Units** item. The command sent is * 00DU . The response might read ?01DU=PSI . The PSI indicates units of pound per square inch.

 **Try It:** Experiment with the other commands in the drop-down select button.

¥**Mode 3 - Continuous Readings:** To start the continuous pressure read mode, click on the **Run** button. The PPT will display continuous pressure readings in the from PPT: box. Apply a varying pressure to the P1 port (closest to the edge of the PPT) and note the change in values. Click the **Stop** button when done.

¥**Mode 4 - Manual Command Entry:** This mode is for manual entry of PPT commands. To send a command, insert the cursor in the to PPT: box by clicking the the mouse in it, or pressing the TAB key. Type in a command - see below. Use the DELETE and arrow keys to change the command entry as needed. Press the ENTER key to send the command to the PPT.

If there is a response, it will be displayed in the from PPT: box. Many commands do not have a response such as a RAM write enable: *00WE. If the reply from the PPT is the same as the command sent, then there was an error and the PPT did not accept that command. Check the command format and try again. Usually, the command will not be accepted because a RAM write enable (*00WE) should have been entered before the command. An exception to this is if a group, or global, addressed command was sent (*90.. to *99...). Then the PPT will always echo the command back in the from PPT: box (e.g. *99WE command sent, *99WE response received).

☞ **Try It:** To find out which pressure units the PPT is set to, type ***00DU** into the to PPT : box and press the ENTER key. The from PPT : response may be **?01DU=PSI** if the unit is set to pounds per square inch (psi). There are 16 units available, and psi is the default units.

☞ **Note:** The command inputs are case insensitive. Upper case and lower case letters mean the same thing (e.g. ***00DU** and ***00du**).

☞ **Try It:** Now press the BACKSPACE key twice, to erase the **DU** from the above example, and type in **p=** . The to PPT : box should now read ***00p=** . Press the ENTER key and the response will be like **?01P=01/01/00** indicating the production date.

☞ **Try It:** To enter a data string A, type ***00WE** into the to PPT : box and press the ENTER key . There should be no response in the from PPT : box. This enables the RAM and EEPROM to store, or write, the next command. Now enter ***00A=Testing!** into the to PPT : box and press the ENTER key. This command stores the character string **Testing!** in the EEPROM. Since this string is stored in EEPROM, it will remain in the PPT even after the power is turned off.

☞ **Note:** Data strings must be 8 characters or less and not have a space character in the string. a <cr> (ENTER key) or space defines the end of the string.

☞ **Try It:** To read the data string A, type ***00A=** into the to PPT : box and press the ENTER key . This response in the from PPT : box should read **?00A=Testing!** .

☞ **Try It:** Enter the commands on the next few sheets to become familiar with the manual command entry mode. Refer to the PPT User s Manual for more complete command instructions and options.

☞ **Try It:** Enter the following commands to become familiar with the manual command entry mode.

PPT Command Input Examples:

<cr> = ENTER key

Command Input (type into the to PPT : box)

Typical Response

1) Type *00P1<cr> Single pressure reading	?01CP= 0.02
2) Type *00V=<cr> To get PPT version number	?01V=02.4C0S2V
3) Type *00T1<cr> Temperature (°C)	?01CT= 25.0
4) Type *00T3<cr> Temperature (°F)	?00FT= 77.0
5) Type *00WE<cr> To enable RAM to set new ID	no response
Type *00ID=23<cr> To set PPT to ID = 23	no response

Note: All subsequent commands must now have the *23 header.

6) Type *23P1<cr> Pressure reading for ID = 23	#23CP= 0.02
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- 7) Type *23WE<cr> To enable RAM to write value A no response
 Type *23A=Hello!<cr> To write Hello! to value A no response
*(note: Only 8 characters can be written to A, B, C, or D storage.
 Also a space character will signify the end of message.)*
- 8) Type *23A=<cr> To read value A stored message #23A=Hello!
- 9) Type *99IN=RESET<cr> to reset the PPT *99IN=RESET
 This also resets the device ID to the null address (00)
- Note:** All subsequent commands must now have the *00 header.
- 10) Type *00P1<cr> Pressure reading for ID = 00 (null address) ?01CP= 0.02
- 11) Click on the Units drop-down select button. Select mm Hg . ?01CP= 1.03
 The new pressure read will be output using mmHg units.
- 12) Use the PPT **COMMANDS - QUICK REFERENCE** below to experiment with other commands

Check in the manual for complete command choices. Remember to precede any command that sets a value or changes configuration with the *00WE<cr> input. This does a RAM write preparation. Any configuration setting change will not be permanent (written into EEPROM) until you do an SP command. That is, unless an SP command is issued, the PPT will revert to it s last stored configuration at power-up.

Please call Honeywell Customer Service at (800) 323-8295 if you have any questions or comments

3 COMMANDS – QUICK REFERENCE

		Example Input (1)	Example Response (2)
AN	Analog Range Setting		
	Turn analog customization on	*01WE *01AN=ON	
	Inquiry	*01AN	?01AN=ON
A=	Data String A		
	Write string A <i>(up to 8 characters, a <cr> indicates end-of-message. More than 8 characters is an invalid write) (Can store info. such as dates, readings, etc.)</i>	*00WE *00A=2-8-95	
	Inquiry	*00A=	?01A=2-8-95
BP	Baud Rate and Parity Setting		
	Set parameters <i>(no parity, 1200 baud)</i>	*99WE *99BP=N1200	
B=	Data String B		
	Write string B <i>(up to 8 characters, a <cr> indicates end-of-message, and more than 8 characters will not write to location) (Can store info. such as dates, readings, etc.)</i>	*00WE *00B=123.4567	
	Inquiry	*00B=	?01B=123.4567
CK	Check EEPROM		
	Inquiry	*00CK	?01CK=OK
C=	Data String C		
	Write string C <i>(up to 8 characters, a <cr> indicates end-of-message, and more than 8 characters will not write to location) The C and D string can be used for a watchdog or reset message (see MO command).</i>	*00WE *00C=This_is_	
	Inquiry	*00C=	?01C=This_is_
DA	Digital and Analog Control		
	Turn on analog output only	*00WE *00DA=A	
	Inquiry	*00DA	?01DA=A
DO	Default Operating Parameters		
	Set DO parameters <i>(factory default setting)</i>	*00WE *00DO=E	
	Inquiry	*00DO	?01DO=E0N
DS	Deadband and Sensitivity Control		
	Set DS parameters <i>(set deadband to 20 x 0.005% = 0.10%FS)</i>	*00WE *00DS=20	
	Inquiry	*00DS	?01DS=00S0
DU	Display Units Control		
	Set DU parameters <i>(set units to in. Hg)</i>	*00WE *00DU=INHG	
	Inquiry	*00DU	?01DU=INHG
D=	Data String D		
	Write string D <i>(up to 8 characters, a <cr> indicates end-of-message, and more than 8 characters will not write to location) The C and D string can be used for a watchdog or reset message (see MO command).</i>	*00WE *00D=A PPT!!!	
	Inquiry	*00D=	?01D=A PPT!!!

		Example Input (1)	Example Response (2)
F=	Custom Full Scale Range		
	Set F= parameter <i>(set custom FS range to 10.5psi)</i>	*00WE *00F=10.5	
	Inquiry	*00F=	?01F=10.500
H=	Highest Analog Output Voltage		
	Set H parameter <i>(set analog high value to 82% x 5V = 4.2V)</i>	*00WE *00H=82	
	Inquiry	*00H=	?01H=82
IC	Idle Count Parameter		
	Set IC parameter <i>(set idle count to 12, so that 12 output samples are skipped)</i>	*00WE *00IC=12	
	Inquiry	*00IC	?01IC=12
ID	Identification Number		
	Set ID number <i>(set device ID of first null addressed unit to 12)</i>	*00WE *00ID=12	
	Confirmation of ID=12	*12P1	#12CP= 14.32
	Set group number [RS-232] <i>(set group ID of unit 12 to 95)</i>	*12WE *12ID=95	
	[RS-232] Group no. inquiry of device ID=12	*12ID	#12ID=95
	[RS-485] <i>(set group ID of unit 12 to 95 with group sub-address of 01)</i>	*12ID=9501	
	[RS-485] Group no. inquiry of device ID=12	*12ID	#12ID=9501
IN	Initialize PPT Microprocessor		
	Stop all current operations <i>(does not affect RAM data)</i>	*99IN	
	Full reset of PPT processor Changes to RAM data are lost unless an SP=ALL command	*99IN=reset	
	?01Main_pressure_tank. was previously issued. (Response is user message, if selected)		
I=	Integration time		
	Set I parameter <i>(set output rate to 50 readings/second)</i>	*00WE *00I=R50	
	Inquiry	*00I=	?01I=R050
L=	Lowest Analog Output Voltage		
	Set L parameter <i>(set analog low value to 28% x 5V = 1.4V)</i>	*00WE *00L=28	
	Inquiry	*00L=	?01L=28
M=	Maximum Full Scale Value Allowed		
	<i>(Factory set)</i> Inquiry	*00M=	?01M=0010psid
MO	Power Up Mode		
	Set MO parameter <i>(Display both user and vendor power-up messages)</i>	*00WE *00MO=M3	
	Required to save in EEPROM for power-up	*00WE *00SP=ALL	
	Inquiry	*00MO	?01MO=X2M3

		Example Input (1)	Example Response (2)
NE	Digital Input Enable to Analog (DAC) Output		
	Set a DAC analog output voltage <i>(example to set output of DAC to 2.5Volts)</i>	*00NE *00N=2500	
	Set continuous PPT DAC parameters <i>(set the PPT#01 DAC output to 2.5Volts)</i> <i>(set the PPT#01 DAC output to 1.25Volts)</i> <i>(set the PPT#01 DAC output to 0.1Volts)</i>	*01NE=DAC *01N=2500 *01N=1250 *01N=100	
N=	Send Number To DAC		
	Set N= parameter <i>(set analog output value to 4096mV = 4.096V)</i>	*00NE *00N=4096	
	Inquiry <i>See also the H=, L=, O=, and W= commands to control the analog output</i>	*00N=	?00N=4096.0
O=	Offset Pressure Window For Analog Output		
	Set O= parameter <i>(set pressure offset window to 28% x 20 psi (FS) = 15.6 psi)</i>	*00WE *00O=28	
	Inquiry	*00O=	?01O=28
OP	Operating Mode Parameters		
	Set OP parameter <i>(set to extended binary output mode)</i>	*00WE *00OP=E	
	Inquiry	*00OP	?01OP=ANew
P1	Pressure, Single, ASCII Format		
	Request compensated pressure	*00P1	?01CP= 14.450
P2	Pressure, Continuous, ASCII Format		
	Request compensated pressure	*00P2	?01CP= 14.450 (repeated)
P3	Pressure, Single, Binary Format		
	Compensated pressure (null address)	*00P3	^@PSA or
	Compensated pressure (assigned address) <i>(typical response is a ^ or { char plus 4 data bytes that are encoded for computer translation)</i>	*01P3	{@PSA
P4	Pressure, Continuous, Binary Format		
	Compensated pressure (null address)	*00P4	^@P@@ or
	Compensated pressure (assigned address) <i>(typical response is a ^ or { char plus 4 data bytes that are encoded for computer translation)</i>	*01P4	{@P@@ (repeated)
P=	Production Date		
	<i>(factory set date, mm/dd/yy)</i> Inquiry	*00P=	?01P=04/13/95
RR	Reading Rate		
	Set RR parameter <i>(skip 5 x 100 = 500 readings if identical)</i>	*00WE *00RR=5	
	Inquiry	*00RR	?01RR=5
RS	Read Status		
	Inquiry	*00RS	?01RS=0000

		Example Input (1)	Example Response (2)
S2	Speed Shift to 2X		
	Set S2 parameter <i>(shift to double speed if pressure changes more than 12 * 0.01%FS = 0.12% FS)</i>	*00WE *00S2=12	
	Inquiry	*00S2	?01S2=12
S5	Speed Shift at 50msec Intervals		
	Set S5 parameter <i>(Output reading if pressure changes more than 60 * 0.01%FS = 0.6% FS)</i>	*00WE *00S5=60	
	Inquiry	*00S5	?01S5=60
SI	Synchronize Pressure Integration		
	Synchronize Integration	*01SI	
SP	Store Parameters in EEPROM		
	Store parameter <i>(store all settings stored in RAM in EEPROM)</i>	*00WE *00SP=ALL	
S=	Serial Number		
	Inquiry	*00S=	?01S=00005137
T1	Temperature, Single, °C		
	Request Celsius temperature	*00T1	?01CT= 24.5 or ?01CT= ..
T2	Temperature, Continuous, °C		
	Request Celsius temperature	*00T2	?01CT= 24.5 (repeated)
T3	Temperature, Single, °F		
	Request Fahrenheit temperature	*00T3	?01FT= 76.1 or ?01FT= ..
T4	Temperature, Continuous, °F		
	Request Fahrenheit temperature	*00T4	?01FT= 76.1 (repeated)
TC	Tare Control Switch		
	Turn tare control on	*00WE *00TC=ON	
	Inquiry	*00TC	?01TC=ON
TO	Transceiver Operating Parameters		
	Set RS485 response delay to 2 character times	*01WE *01TO=2	
	Inquiry	*01TO	#01TO=M2CN
T=	Set Tare Value		
	Set tare value to current pressure reading	*00WE *00T=SET	
	Set tare value to a % of full scale pressure <i>(set tare to 10% of full scale; 10psi for a 100psi PPT)</i>	*00WE *00T=0.1	
	Inquiry	*00T=	?01T=0.1000

		Example Input (1)	Example Response (2)
U= User Supplied Display Units			
	Set display units <i>(set units to 5.1 x psi)</i>	*00WE *00U=5.100	
	Activate user display units	*00WE *00DU=USER	
	Inquiry	*00U=	?01U=5.100
V= Version Number			
	Inquiry	*00V=	?01V=02.3B6S2V
WE Write Enable to EEPROM or RAM			
	Write several RAM parameters <i>(example to set output units to cm water column)</i> <i>(factory default setting)</i> <i>(Cancel continuous WE=RAM command)</i>	*01WE=RAM *01DU=CMWC *01DO=D *01WE=OFF	
<i>Note: Any command changes in RAM will be lost when the PPT is powered down unless an SP command saves them to EEPROM.</i>			
W= Set Width of Analog Pressure Window			
	Set W= parameter <i>(set pressure window width to 40% x 20 psi (FS)= 8 psi)</i> <i>(set analog set point)</i>	*00WE *00W=40 *00W=S	
	Inquiry	*00W=	?01W=40
X=, Y= Slope - User Compensation Control			
	Set X= parameter <i>(set user slope control to 0.005% x 17 = 0.085%FS)</i>	*00WE *00X=17	
	Inquiry	*00X=	?01X=17
<i>Note: The input slope and offset control are for user supplied mx+b correction. The Y= is for negative slope for differential units.</i>			
Z= Offset - User Compensation Control			
	Set Z= parameter <i>(set mx+b pressure offset to 20 x 0.005%FS = 0.1%FS)</i> <i>(null adjust output at zero pressure)</i>	*00WE *00Z=20 *00Z=CAL	
	Inquiry	*00Z=	?01Z=20
~ Command Header for Binary DAC Values	<i>(Need to set DA=G, N, or R to receive, or O, S, or U to transmit)</i>		
	Then enable single RAM write for DAC <i>(example to set output of DAC to 2.5Volts)</i> <i>See also the H=, L=, O=, and W= commands to control the analog output</i>	*00NE ~-FF(	

(1) A carriage return, <cr>, should follow each input. If the PPT has an established address of 12, for instance, then begin the command with *12.. instead of *00...

(2) The responses shown here begin with ?01.. and are for a null address PPT. That is, a PPT that has not yet established unit identification (see ID command). If the PPT has an assigned address of 23, for instance, the response will begin with #23.. instead of ?01