HanseVIEW

January 2009

HanseVIEW

(C) 1995-2009 Vibration Research Corporation

Printed: January 2009 in USA

Table of Contents

Part I

1 Help Index

HanseVIEW Help Index

How To...
> Set up the system
> Set the accelerometer calibration
> Calibrate the system
> Enter test definitions
> Run tests
> Display and print graphs
> Store and retrieve data
> Convert tests created using the version 1.x software
> Create customized reports

> Call Vibration Research Corporation at (616) 669-3028 with additional questions.

Menu Commands
> File menu
> Configuration menu
> Test menu
> Graph menu
> View menu
> Window menu
> Help menu

Control Center   **Typical Screen**   **Stop Codes**

Part II

2 How to ...

2.1 How to set up the system

2.1.1 Quick setup Instructions

Quick Setup Instructions

1.   If you are installing the hardware into your own computer, read the "Computer Requirements" section.
2.   Install the software as described in the "How to install the software" section.
3.   Install the hardware as described in the "How to install the hardware" section.
4.   Run HanseVIEW by clicking the HanseVIEW icon on the desktop.
5.   Set the accelerometer mV/g levels as described in the "How to Set the Accelerometer Calibration" section.
6.   Read the rest of the manual (or online help) for details on how to change parameters, change tests, and change test types. Note: Pressing the <F1> key at any time while running HanseVIEW will open up a window with help information describing the active window or dialog box.

2.1.1.1 Computer requirements

Computer requirements

- A Pentium computer (We recommend 350MHz or faster). The program will run on 486 machines, but the graph display speed will be unacceptable.
- VGA video card & monitor. We recommend using a screen resolution of 1024 x 768 or higher.
- Mouse and keyboard
- 3.5" floppy disk drive or CD-ROM drive or network connection.
- Hard disk drive with 50 MB of free space.
- Microsoft Windows 95, 98, NT 4.0, 2000, XP or VISTA operating system.
- Parallel port for the software protection key and printer.
- 16 MB RAM minimum (64MB recommended).
- Any Windows-compatible printer (optional).
- Vibration Research Corp. supplies the analog I/O unit, and the software key.

2.1.1.2 Install the hardware

2.1.1.2.1 Overview

Install the hardware

- DaqLAB

- DaqBoard/2000

- DaqBook/216
- VR8500

2.1.1.2.2 How to install DaqLab

How to install the hardware (DaqLAB)

About the Key

The software key is shipped taped to the inside cover of the HanseVIEW Users Manual.
There are two types of keys
The first type is a small white 25-pin connector with your company name on one side.
The second type is a small purple USB key with a green light and a hole in the middle.
  This key is essential to the proper functioning of HanseVIEW. It is the key that unlocks the software, allowing you to run the test types that you have purchased. If you have a key with 25 pin connector it must be plugged into the parallel port (printer port) on the rear of the controller computer for the

controller to run a test. If you have a small purple key it must be plugged into the USB port on the controller computer. **Always install the Key Driver from the installation CD PRIOR to plugging in the USB key**.

USB Key

You can install and run the HanseVIEW program on a computer without the key attached (for example, your office computer) to read in data files created by the controller computer, and print graphs and reports of that data. All functions will work without the key attached, with the exception of actually running a test.

Connecting the IOTech DaqLab I/O Hardware:

1. Set up the computer in the conventional configuration, with power cables, mouse, keyboard, and monitor.
2. Plug the Security Key into a USB port of the computer. The Security Key is shipped in the front cover of the manual.
3. Connect the serial cable between Com1 of the computer and Process Loop Controller..
4. Insert VRC supplied parallel port card into the computer.
5. Connect the IOTech daqLAB to ethernet port on computer.
6. Open the *Windows* control panel (Start menu -> Settings -> Control Panel)
7. Double-click the "Network and Dialup Connections" icon
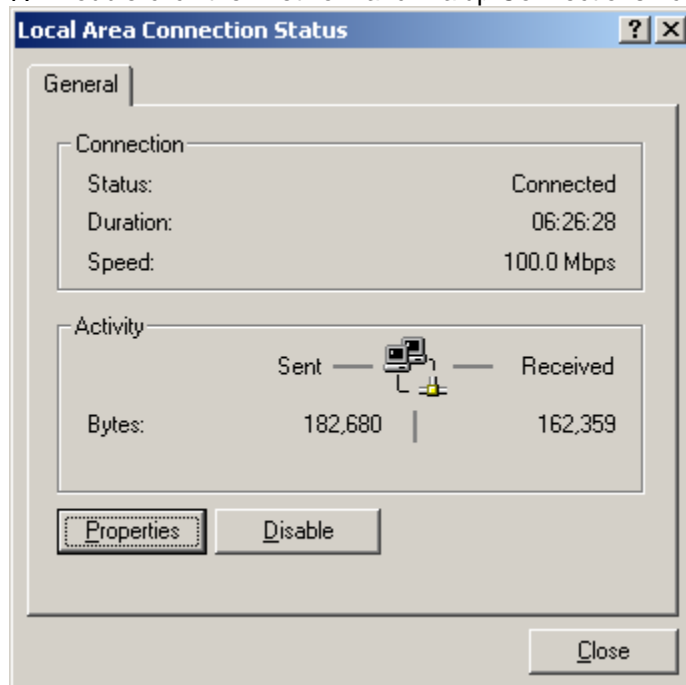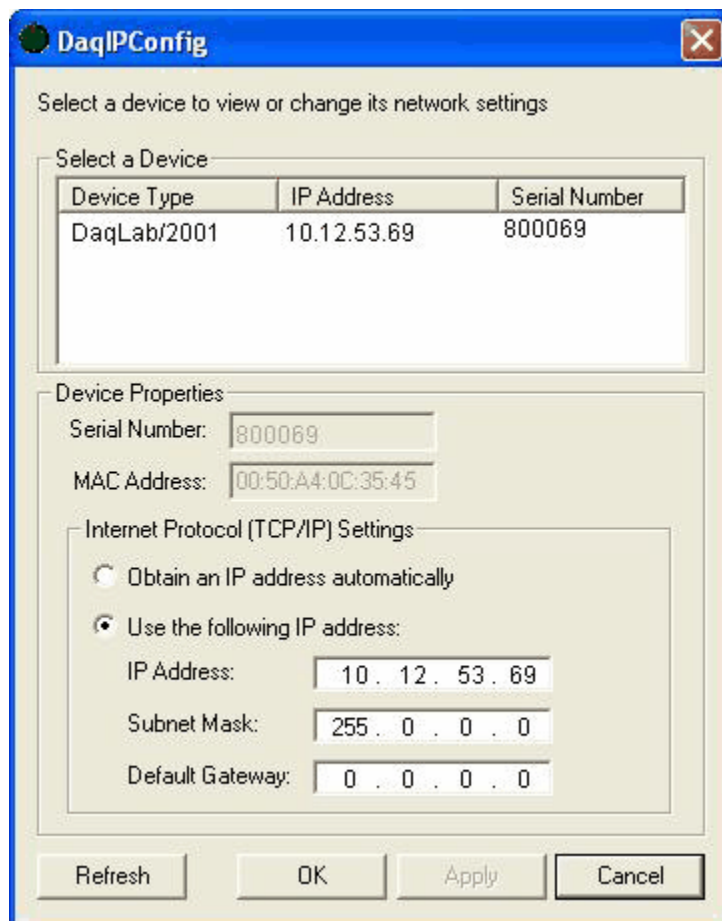
8. Double-click the "Network Connection" icon for the network connected to the DaqLab
9. In the "Local Area Connection Status" box click on "Properties" button
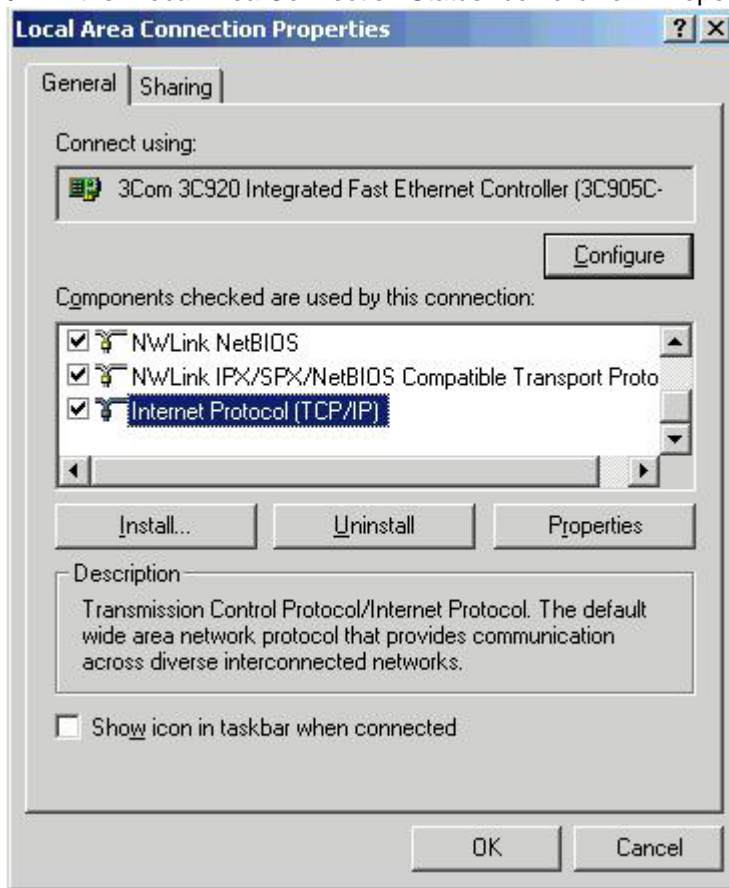
10. Double-click the "Internet Protocol (TCP/IP)" component
11. Select the "Use the following IP Address" radio button.

Internet Protocol (TCP/IP) Properties ? ✕

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address:	10 . 0 . 0 . 1
Subnet mask:	255 . 0 . 0 . 0
Default gateway:	. . .

○ Obtain DNS server address automatically

● Use the following DNS server addresses:

| Preferred DNS server: | . . . |
| Alternate DNS server: | . . . |

Advanced...

OK   Cancel

12. Enter IP address 10.0.0.1 with Subnet mask 255.0.0.0
13. Run the "DaqIPConfig" applet (Start menu -> Programs -> IOtech DaqX Software -> DaqIPConfig
14. Select the DaqLAB, Select the radio button labeled "Use the following IP address"

DaqIPConfig

Select a device to view or change its network settings

Select a Device

Device Type	IP Address	Serial Number
DaqLab/2001	10.12.53.69	800069

Device Properties

Serial Number: 800069

MAC Address: 00:50:A4:0C:35:45

Internet Protocol (TCP/IP) Settings

○ Obtain an IP address automatically

● Use the following IP address:

IP Address: 10 . 12 . 53 . 69

Subnet Mask: 255 . 0 . 0 . 0

Default Gateway: 0 . 0 . 0 . 0

[Refresh]   [OK]   [Apply]   [Cancel]

15. Enter address 10.0.0.2, click "OK"
16. Power cycle the DaqLAB
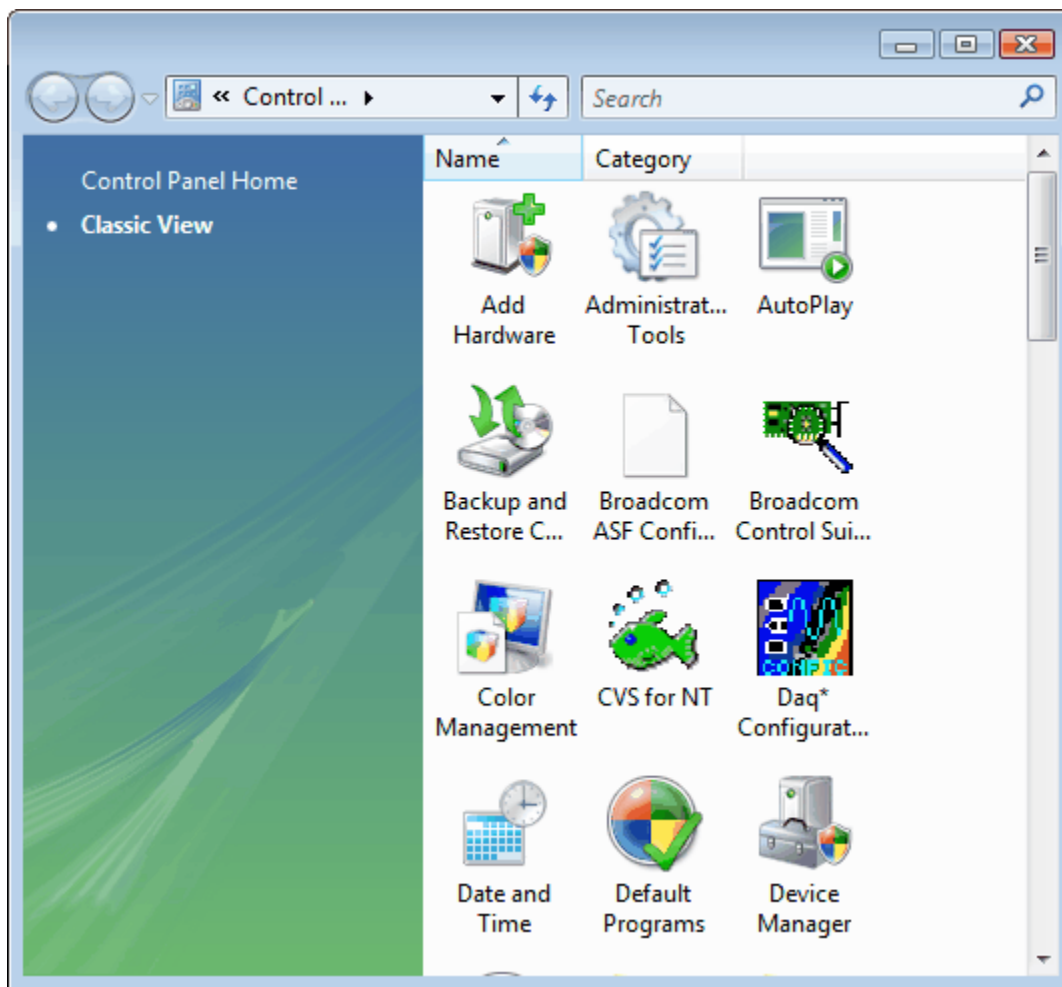
17. Open Daq* Configuration from Control Panel
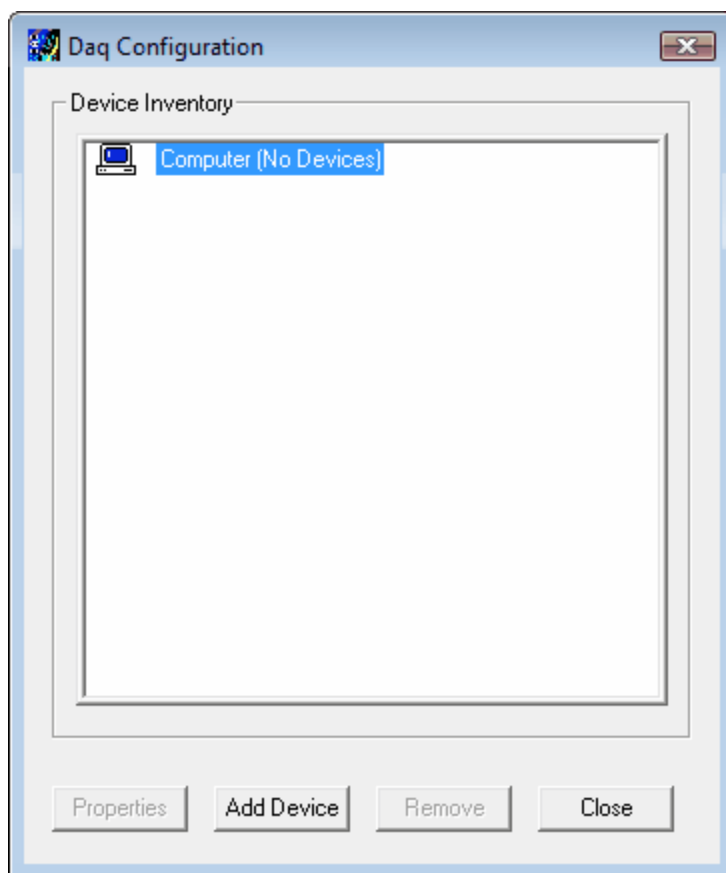
18. "Add Device"
19. Select the daqLab/2005

20. Select Manual IP Setting
21. Set IP Address 10.0.0.2
22. Click "OK" button

2.1.1.2.3 How to install DaqBoard/2000

How to install the hardware (DaqBoard/2000)

About the Key

The software key is shipped taped to the inside cover of the HanseVIEW Users Manual.
There are two types of keys
The first type is a small white 25-pin connector with your company name on one side.
The second type is a small purple USB key with a green light and a hole in the middle.
 This key is essential to the proper functioning of HanseVIEW. It is the key that unlocks the software, allowing you to run the test types that you have purchased. If you have a key with 25 pin connector it must be plugged into the parallel port (printer port) on the rear of the controller computer for the controller to run a test. If you have a small purple key it must be plugged into the USB port on the controller computer. Always install the Key Driver from the installation CD PRIOR to plugging in the USB key.

Parallel Port Key

USB Key

You can install and run the HanseVIEW program on a computer without the key attached (for example, your office computer) to read in data files created by the controller computer, and print graphs and reports of that data. All functions will work without the key attached, with the exception of actually running a test.

The key can be connected in-line with your printer cable, allowing you to use both the key and the printer at the same time. You can attach any peripheral (usually a printer) that you desire by connecting it to the open, female end of the key.

Connecting the IOTech DaqBoard/2000 I/O Hardware:

1. Set up the computer in the conventional configuration, with power cables, mouse, keyboard, and monitor.
2. Plug the Security Key into a USB port of the computer. The Security Key is shipped in the front cover of the manual.
3. Connect the serial cable between Com1 of the computer and Process Loop Controller..
4. Install the IO Tech DaqBoard/2000. The ***DaqBoard/2000c Series Compact-PCI Data Acquisition Boards Installation Guide*** gives specific instructions for installing the DaqBoard/2000. This document is included with every DaqBoard, can be downloaded from IOTech (www.iotech.com), and is included on the HanseVIEW distribution disk. The most recent drivers can be downloaded from IOTech as part of the DaqView software package.(www.iotech.com)
5. Connect accelerometers to Input Channels 1,2,3,4 of the IOTech IO unit. This unit does not supply current for accelerometers. If required a user supplied device must be connected between the IOtech IO and the accelerometers.
6. Open Daq* Configuration from Control Panel
7. "Add Device", Add DaqBoard/2000
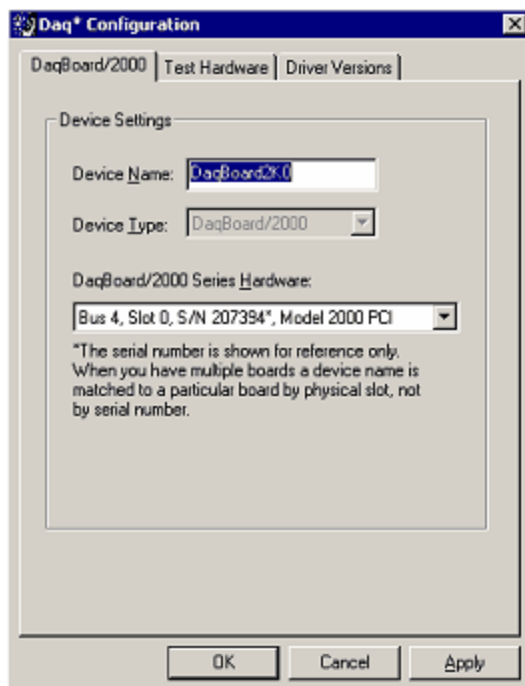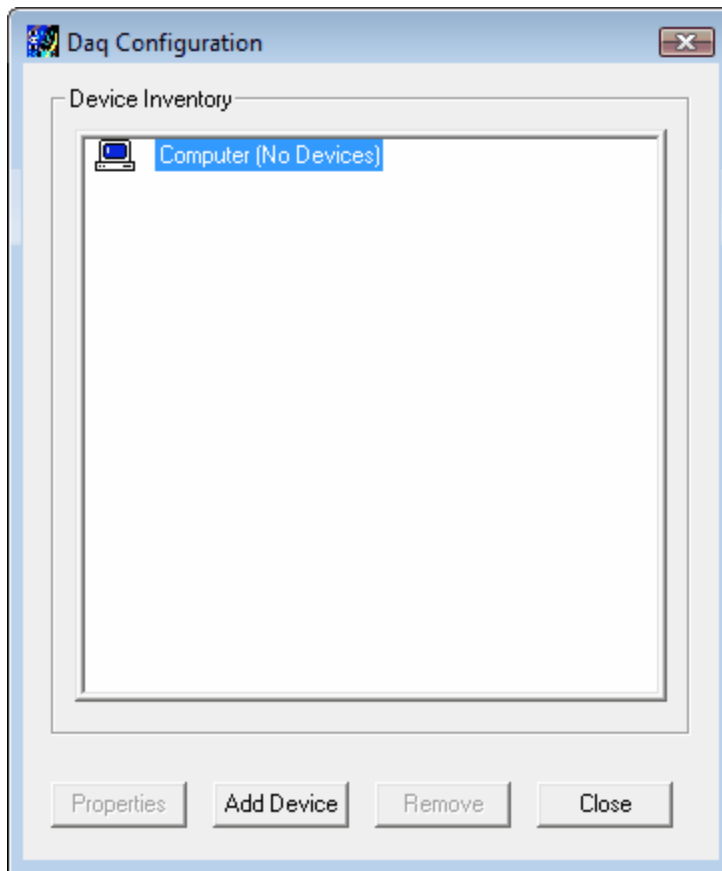
How to install the hardware (DaqBook/216)

About the Key

The software key is shipped taped to the inside cover of the HanseVIEW Users Manual.
There are two types of keys
The first type is a small white 25-pin connector with your company name on one side.
The second type is a small purple USB key with a green light and a hole in the middle.
  This key is essential to the proper functioning of HanseVIEW. It is the key that unlocks the software, allowing you to run the test types that you have purchased. If you have a key with 25 pin connector it must be plugged into the parallel port (printer port) on the rear of the controller computer for the controller to run a test. If you have a small purple key it must be plugged into the USB port on the controller computer. Always install the Key Driver from the installation CD PRIOR to plugging in the USB key.

Parallel Port Key

USB Key

You can install and run the HanseVIEW program on a computer without the key attached (for example, your office computer) to read in data files created by the controller computer, and print graphs and reports of that data. All functions will work without the key attached, with the exception of actually running a test.

The key can be connected in-line with your printer cable, allowing you to use both the key and the printer at the same time. You can attach any peripheral (usually a printer) that you desire by connecting it to the open, female end of the key. The daqBook CANNOT use be connected in-line with either your printer or the key.

Connecting the IOTech DaqBook/216 I/O Hardware:
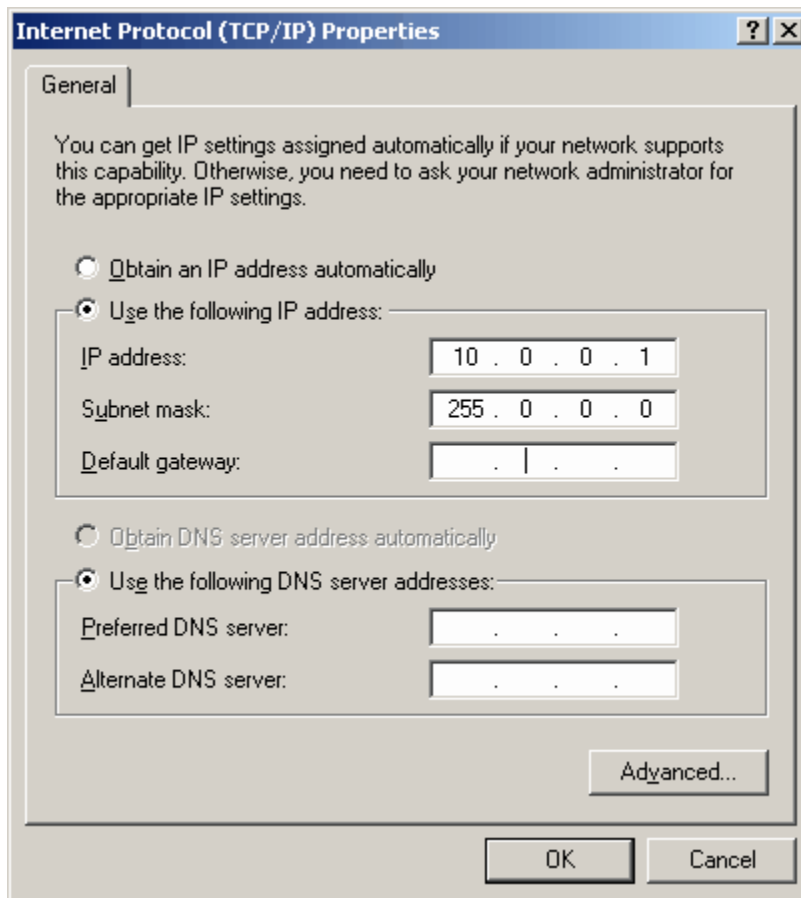
1. Set up the computer in the conventional configuration, with power cables, mouse, keyboard, and monitor.
2. Plug the Security Key into the parallel port of the computer. The Security Key is shipped in the

front cover of the manual. If you have a printer installed, install the key between the computer's parallel port and the printer cable.
3. Connect the serial cable between Com1 of the computer and Process Loop Controller..
4. Insert VRC supplied parallel port card into the computer.
5. Connect the IO Tech DAQBook to VRC supplied.supplied parallel port. Do not connect key and IO Tech to same port! If you are using a DaqBoard2000, install DaqBoard in a open PCI slot, and connect to the external IO Unit. The most recent drivers can be downloaded from IOTech as part of the DaqView software package.(www.iotech.com)
6. Connect power to the IO Tech DAQBook..
7. Open Daq* Configuration from Control Panel
8. "Add Device", Add daqBook/216
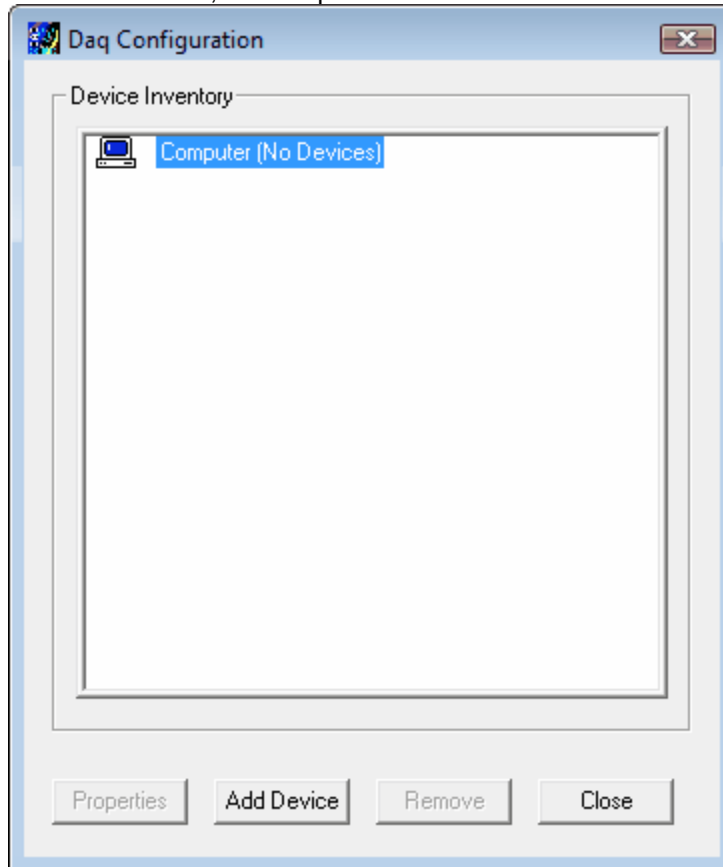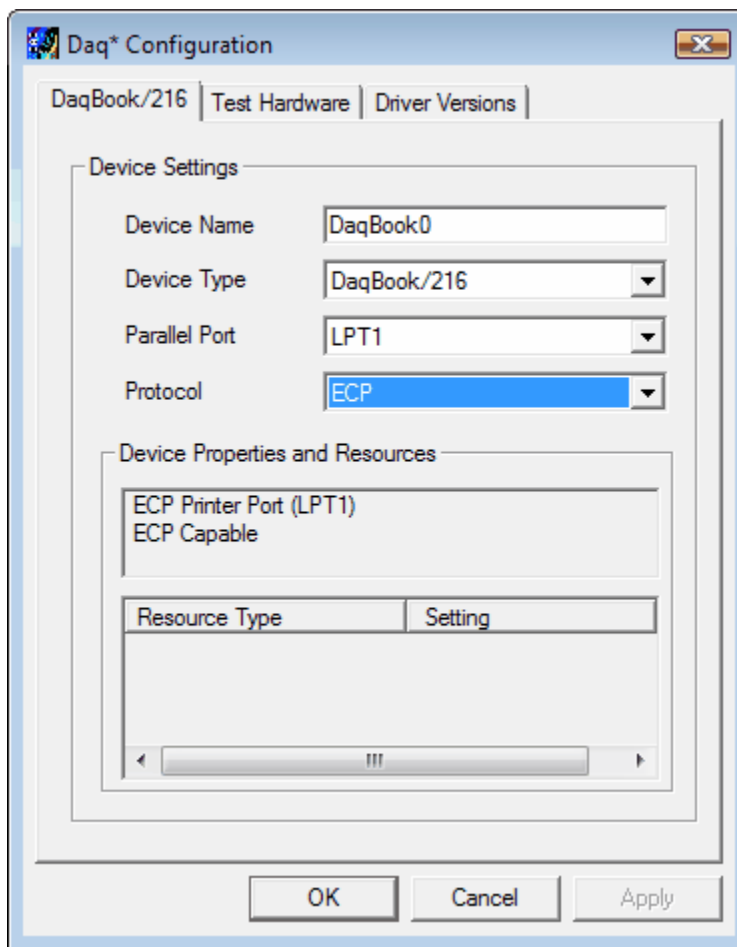
The protocol should always be set to ECP. Other protocols will work with reduced performance.

2.1.1.3   How to install the software

How to install the software

This software package runs on Microsoft Windows 95, 98, NT 4.0, 2000, and XP.

Software Installation

If you purchased this system with a computer, the software will already be installed. Otherwise, install the software using the following steps if the install program does not start automatically:

1. A CD-ROM containing the HanseVIEW software is supplied with your system. Run the program "R:\install\setup.exe" on the CD-ROM (where R: is the drive letter for your CD-ROM drive).
2. The install program (setup.exe) will prompt for the location to install the program. Click the "Next >" button in each dialog box to accept the default values. When installation is complete, click the "Finish" button.
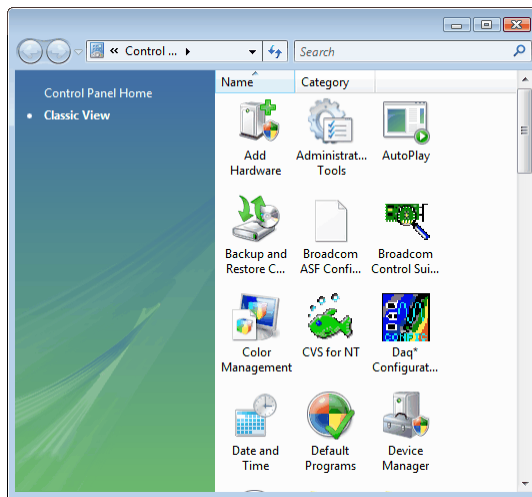
3. Start HanseVIEW
4. Use menu 'Configuration .. Parameters' to setup the IO Hardware and PID Loop controller.
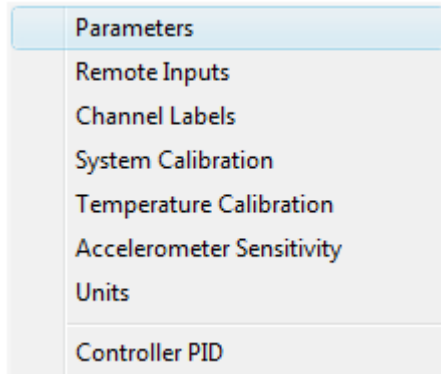
5. The Spectrum Hardware will be listed as the first item under Spectrum Hardware. The Spectrum Hardware must be set to disabled, if the Analysis package is not included in the software. If the Spectrum Hardware is a daqLab the J1 jumper must be set to CH8. The daqBooks and daqCards are normally set to CH0. Any temperature modules are addressed at J1+1.

Configuration

| Temp Calibration | Accel Sensitivity | System Units |
| Parameters | Remote | Labels | Calibration |

Spectrum Hardware

Hardware Update

1000   mS

Channels per IO Scan

4

IO Hardware   Temperature Module

Disabled   DBK19/52

DBK18 J1 Jumper   DBK19/52/82/83/84

CH0   JP1=1

PID Loop Controller

Controller

Watlow F4   Process Cascade

Serial Port   Baud Rate   Data Bits   Stop Bits   Parity

COM1   19200   8   1   None

Emergency stop input

| OK | Cancel | Apply | Help |

6. The PID Loop controller supports several devices. The most commonly used device is the WatlowF4. The WatlowF4 configuration is shown above.

2.1.2   How to set the accelerometer calibration

How to set the accelerometer calibration

The calibrated mV/g settings for your accelerometers are entered by selecting the Configuration..Accelerometer Sensitivity menu command. For each channel, enter the calibration factor (in mV/g) for the accelerometer in use on that channel. This calibration factor is normally stamped on the accel or supplied on an accel calibration sheet. You may also (optionally) enter a serial number and a calibration date for each accelerometer to aid in tracing the current calibration settings.

When the appropriate values are entered, click the "OK" button. The new accelerometer sensitivity factors will take effect immediately.

2.1.3   How to calibrate the system

How to Calibrate the system

Note: If you just received your system from Vibration Research this calibration does not need to be done until the due date on the Calibration Certificate in the back cover of the manual.

This calibration procedure should be performed annually.

1. Connect a power cord to the VibrationVIEW I/O unit.
2. Connect 2 coaxial cables together with a T-connectors.
3. Connect one end of the cable to a shorting plug.
4. Connect the other end of the cable to the Digital Volt Meter (DVM).
5. Connect the T-Connector to Input#1 on the IOTech Box.
6. Turn the unit on, and allow 1 hour for the temperature to stabilize before performing calibration.
7. Run HanseVIEW.
8. Set up new test with all channels active, and only channel 1 selected for control.
9. Select the Configuration..Parameters menu command.
10. Click the Calibration tab.
11. Connect one end of the cable to a shorting plug.
12. Connect the T-Connector to Input#1 on the IOTech Box.
13. Verify DVM reads 0.000VDC.
14. Click the "AZ" (auto-zero) button to set the input offset value for channel 1.
15. Repeat steps 12-14 for each additional channel
16. Click the "Apply" button. If a password is required use "Control". (Case Sensitive).
17. Remove Shorting plug from opposite end of coaxial cable, and plug Function Generator in its place.
18. Set the Function Generator to output Sine waveform at 1000Hz at 1.000Vrms. Verify Frequency and Amplitude with DVM. (+/- 20Hz, +/-0.001 Vrms)
19. Set DVM to display DC voltage. Adjust Function Generator DC offset until DVM reads 0mVDC (+/-5mV).
20. Set DVM to display AC voltage. Verify amplitude 1.000vRMS (+/-0.5 mV).
21. Connect the T-Connector to Input#1 on the IOTech Box.
22. Press "AG" (auto-gain) button to set input gain value for channel 1.
23. repeat steps 21-22 for each additional channel
24. Click the "Apply" button. If a password is required use "Control". (Case Sensitive).

Optional Output Calibration (Not Required if Output Channel is not used)

25. Connect one end of the cable to a shorting plug.
26. Connect the T-Connector to Input#1 on the IOTech Box.
27. Set *Output Channels* channel 1 Gain Multiplier=1.00
28. Connect the DVM to the HanseVIEW Output#1 (pins 7(ref) & 9(+VDC) on the 37Pin Connector on the IOTech Box.
29. Enter Voltage read on the DVM (DC mV) into the *Output Channels* Offset Box for channel 1.
30. Remove Shorting plug from opposite end of coaxial cable, and plug Function Generator in its place.
31. Set the Function Generator to output Sine waveform at 1000Hz at 1.000Vrms. Verify Frequency and Amplitude with DVM. (+/- 20Hz, +/-0.001 Vrms)
32. Set DVM to display DC voltage. Adjust Function Generator DC offset until DVM reads 0mVDC (+/-5mV).
33. Set DVM to display AC voltage. Verify amplitude 1.000vRMS (+/-0.5 mV).
34. Connect the T-Connector to Input#1 on the IOTech Box.
35. Connect the DVM to the HanseVIEW Output#1 (pins 7(ref) & 9(+VDC) on the 37Pin Connector on the IOTech Box.
36. Enter Voltage read on the DVM (DC mV) into the *Output Channels* Gain Multiplier Box for channel 1.
37. Click the "Apply" button. If a password is required use "Control". (Case Sensitive).

Calibration is now complete.

2.1.4   How to enter tests

How to enter tests
1) Start a New Profile

"Easy New Test" on the Toolbar

2) Enter a Sequence

T(°C) V(Grms) H(G)   Start Time

1 | 25.0 | 0.0 | 50.0 | at 00:00:00

a starting temperature, and optional vibration and humidity

Action   T(°C) V(Grms) H(G)

NORM ▼ to | 100.0 | 0.0 | 50.0

a target temperature and vibration. Use **Normal** Step Action to Ramp to Temperature a Duration Time for the First Step

          T(°C) V(Grms)
Duration /Min   /Min

| 00:01:30 | 50.00 | |

  2 100.0   0.0   50.0   at 00:30:00 G.SOAK ▼ to | 100.0 | 0.0 | 50.0 | for | 00:30:00 | |

a temperature soak step on the second line

» 3 100.0   0.0   50.0   at 01:00:00 NORM ▼ to | 100.0 | 10.0 | 50.0 | for | 00:00:10 | | 60.00 |

Vibration Ramp to 10 G's over 10 Seconds

  4 100.0   10.0   50.0   at 01:00:10 NORM ▼ to | 100.0 | 10.0 | 50.0 | for | 00:05:00 | |

a 5 minute vibration step

  5 100.0   10.0   50.0   at 01:05:10 NORM ▼ to | 100.0 | 0.0 | 50.0 | for | 00:00:30 | | 20.00 |

Vibration back down

» 6 100.0   0.0   50.0   at 01:05:40 NORM ▼ to | 25.0 | 0.0 | 50.0 | for | 00:00:30 | 150.00 |

Temperature back down

Sequence will now look like this:

	T(°C)	V(Grms)	H(G)	Start Time	Action		to	T(°C)	V(Grms)	H(G)	Duration	T(°C) /Min	V(Grms) /Min
1	25.0	0.0	50.0	at 00:00:00	NORM	▼	to	100.0	0.0	50.0	for 00:01:30	50.00	
2	100.0	0.0	50.0	at 00:01:30	G.SOAK	▼	to	100.0	0.0	40.0	for 00:30:00		
» 3	100.0	0.0	40.0	at 00:31:30	NORM	▼	to	100.0	10.0	40.0	for 00:00:30		20.00
4	100.0	10.0	40.0	at 00:32:00	NORM	▼	to	100.0	10.0	40.0	for 00:10:00		
5	100.0	10.0	40.0	at 00:42:00	NORM	▼	to	100.0	0.0	40.0	for 00:00:30		20.00
6	100.0	0.0	40.0	at 00:42:30	NORM	▼	to	25.0	0.0	40.0	for 00:02:00	37.50	
7	25.0	0.0	40.0	at 00:44:30		▼	to				for		

| Insert | Delete |

click the | Next > | button when complete

3) Define the outputs:

Step Action	Discrete Outputs

1 00:00:00 TO 00:01:30 25°C TO 100°C 0G TO 0G   Heat | Cool | Vib | Aux4 | Aux5 | Aux6 | Aux7 | Aux8

2 00:01:30 TO 00:31:30 100°C TO 100°C 0G TO 0G   Heat | Cool | Vib | Aux4 | Aux5 | Aux6 | Aux7 | Aux8

3 00:31:30 TO 00:32:00 100°C TO 100°C 0G TO 10G   Heat | Cool | Vib | Aux4 | Aux5 | Aux6 | Aux7 | Aux8

4 00:32:00 TO 00:42:00 100°C TO 100°C 10G TO 10G   Heat | Cool | Vib | Aux4 | Aux5 | Aux6 | Aux7 | Aux8

5 00:42:00 TO 00:42:30 100°C TO 100°C 10G TO 0G   Heat | Cool | Vib | Aux4 | Aux5 | Aux6 | Aux7 | Aux8

» 6 00:42:30 TO 00:44:30 100°C TO 25°C 0G TO 0G   Heat | Cool | Vib | Aux4 | Aux5 | Aux6 | Aux7 | Aux8

Your required outputs will very depending on the configuration of the chamber.
This example shows a dedicated output to run vibration turned on for each step with vibration.

click the [Next >] button when complete

3) Optional PID reassignment

Step Action	Select PID

» 1 00:00:00 TO 00:01:30 25°C TO 100°C 0G TO 0G   DEFAULT ▼

2 00:01:30 TO 00:31:30 100°C TO 100°C 0G TO 0G   DEFAULT ▼

3 00:31:30 TO 00:32:00 100°C TO 100°C 0G TO 10G   DEFAULT ▼

4 00:32:00 TO 00:42:00 100°C TO 100°C 10G TO 10G   DEFAULT ▼

5 00:42:00 TO 00:42:30 100°C TO 100°C 10G TO 0G   DEFAULT ▼

6 00:42:30 TO 00:44:30 100°C TO 25°C 0G TO 0G   DEFAULT ▼

PID #1
Proportional
5
Integral
0
Derivative
0

PID #2
Proportional
5
Integral
0
Derivative
0

PID #3
Proportional
5
Integral
0
Derivative
0

PID #4
Proportional
5
Integral
0
Derivative
0

Default PID settings will not change PID during any steps

click the [Next >] button when complete

4) Optional Limits

Program Values:

Maximum Vibration   9999.9   G
Maximum Temperature   9999.9   °C
Minimum Temperature   -9999.9   °C
Maximum Humidity   100   G

Default settings will disable test limits

click the [Next >] button when complete

3) Define the parameters:

PSD

Sample frequency	25000
Number of Samples	4096
PSD Sample Averaging (%)	0
Minimum Vibration Frequency	10
Maximum Vibration Frequency	17500

Temperature Controller

Guar Soak -Window	5
Guar Soak +Window	5
Temperature Loop Mode	Cascaded

Fatigue

Material Beta	8
Calculate Fatigue Using	Accel

Sequence

Times to repeat the sequence	1

Suggested values are adequate for most tests.

click the **Next >** button when complete

4) Define the Spectrum Channels

Vibration Channels

1)	☑	X Axis	9)	☐	CH9
2)	☑	Y Axis	10)	☐	CH10
3)	☑	Z Axis	11)	☐	CH11
4)	☐	Ch4	12)	☐	CH12
5)	☐	Ch5	13)	☐	CH13
6)	☐	Ch6	14)	☐	CH14
7)	☐	Ch7	15)	☐	CH15
8)	☐	Ch8	16)	☐	CH16

Control From Vibration Channels

☑ Channel 1	☐ Channel 5	☐ Channel 9	☐ Channel 13
☑ Channel 2	☐ Channel 6	☐ Channel 10	☐ Channel 14
☑ Channel 3	☐ Channel 7	☐ Channel 11	☐ Channel 15
☐ Channel 4	☐ Channel 8	☐ Channel 12	☐ Channel 16

Channel 1 shown defined for X Axis.
Channel 2 shown defined for Y Axis.
Channel 3 shown defined for Z Axis.
Channel 4,5,6,7,8 shown disabled.

Control Output uses average of X,Y, and Z Axis

click the **Next >** button when complete

4) Define Temperature Channels

Temperature channels may be renamed.

If optional 14 Channel Thermocouple input is included, the channels may be selected for data collection, and the thermocouple for these monitor channels may be changed

click the [Next >] button when complete

5) Define Data Storage

click the [Finish] button when complete

6) Retain test as a new file

Save the changes?

Do you want to save these changes to the hard drive?
   YES = Store the changes in a file
    NO = Keep the changes for the current session only
CANCEL = Return to the Profile Definition dialog box

Yes   No   Cancel
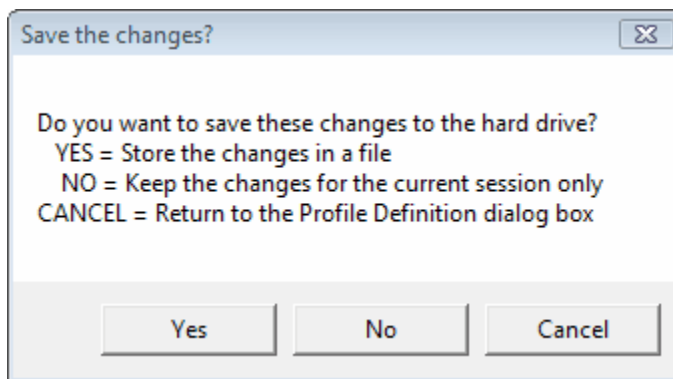
Select Yes to retain this test for future use. Enter a new test name when prompted.

2.1.5   How to run tests

How to run a Repetitive Shock test

To run a Repetitive Shock test select the Test..Open Test menu command or click the "Open test" toolbar button. A list of test names is displayed. Select Files of type "HanseVIEW Chamber Profiles (*.vcp)" and select the test you wish to run. Click the "Open" button to load that test.

To run the test, click the "Run" button in the Chamber Control Center. To stop the test, click the "Stop" button.

2.1.6   How to display and print graphs

How to display and print graphs

The graphs for HanseVIEW are where the majority of the test actions are observed. To display a graph, select the File..New Graph menu commandor click the "New Graph toolbar" button. A dialog box appropriate for the current test will appear. See the appropriate section for specifics on the available graph types:

- Repetitive Shock Settings dialog box

Several keyboard and mouse shortcuts are available to manipulate the graph display:

- Ctrl-G to edit the graph settings
- Ctrl-A to autoscale the vertical (Y) axis
- Ctrl-F to autoscale both the vertical and horizontal axes
- Ctrl-D to toggle the cursor display
- F8 to insert an annotation
- F7 to remove an annotation (click on the annotation text with the left mouse and then press F7)
- F4 to move an annotation (click on the annotation text with the left mouse, press F4, move the annotation to the new location, and click the left mouse button to select the new position)

- Click and hold down the right mouse button, move the mouse to draw a rectangle, and release the mouse button to zoom in on an area of the graph.
- Double-click the right mouse button to zoom out to show all of the data

Using the Clipboard
While a graph is displayed, it can be copied to the Windows Clipboard by clicking on the graph with the mouse, and then selecting the File..Copy Graph menu command, clicking the "Copy Graph" toolbar button, or by pressing Ctrl+C. After copying the graph to the clipboard, switch to the application into which you want to paste the graph image, and use that application's Edit..Paste menu command. You

can then resize it to meet your needs. The Edit..Paste command will only work in applications that are able to use metafile graphics (e.g. Microsoft Word).

Windows also allows you to copy the active dialog box or the entire screen to the clipboard:
- To copy just the active window or dialog box, hold down the "Alt" key and press the "Print Scrn" key (usually found above the numeric keypad).
- To copy the entire screen to the clipboard, press the "Print Scrn" key by itself.

Then go to the desired application, and use that application's Edit..Paste menu command to insert the copied image.

Using the Printer
To print a graph, select the graph by clicking on it with your mouse, and then by selecting the File..Print Active Graph menu command or clicking the "Print Graph" toolbar button. A dialog box will appear prompting you for the printer to which to print the graph. Select an appropriate printer, and click the "OK" button. The graph will then be printed to the selected printer.

You can also select the File..Printer Setup menu command or the File..Print Options menu command to modify your printer parameters.

Laser printers that only print in black and white will produce the best graph output if you select BLACK AND WHITE mode rather than COLOR mode when creating a new graph. To change a graph from color to black-and-white, edit the graph settings by selecting the Graph..Edit Graph Settings menu command or clicking the "Edit Graph" toolbar button, change the style from "Color" to "Black and White" and clicking the "OK" button.

2.1.7   How to store and retrieve data

How to store and retrieve data

How to store Data
To store the data for the current test, select the File..Save Data menu command or click the "Save Current Data" toolbar button. A dialog box will appear prompting you for a file name into which to store the data. When the "Save" button is clicked all parameters for the current test will be saved to the hard drive.

The default directory for saving data is set in the test specification. Select the Test..Edit Test menu command, and then click the Data Storage tab to define the default data directory for the current test.

The default file name has the form "Aug25-1617-0001" where "Aug25"indicates the date and "1617" indicates the time the test was started (i.e. August 25 at 4:17 pm). 0001 is an index value that is incremented every time a file is saved while the test is running. Therefore, for a test begun at 4:17 pm on August 25, the default names for the data files will be "Aug25-1617-0001", "Aug25-1617-0002", "Aug25-1617-0003", etc. Automatic data storage will always use this sequence of file names. When you manually store the data (using the File..Save Data menu command) you may change the file name to anything you desire before clicking on the "Save" button.

How to View Stored Data
To view stored data, select the File..Open Data menu command or click the "Open Stored Data" toolbar button. A dialog box will appear prompting you for the name of the file you wish to view. Select the desired file, and click the "OK" button. A graph with the stored data will be displayed. Select the Graph..Edit Graph Settings menu command (or press Ctrl-G) to change the traces and/or type of the graph.

Hint: While a stored graph is displayed, you can use the *left and right arrow keys* to scan backwards and forwards in time through all of the data files stored in the same directory as the currently displayed file. Using this feature you can quickly scan through many stored data sets.

To create a formatted report of the data displayed in the current graph, select the File..Create Report menu command.

2.1.8   How to convert tests created using the version 1.x software

How to convert tests created using the version 1.x software

Select the File..Read Old File Formats..Test Profiles menu command to bring up a File Open dialog box. Select the test file from those listed in the dialog box. Click the "Open" button and the test will be loaded.

If a test of the same name with the new format is not present, the converted test will be automatically saved to the same directory with the same file name, but with the new file format's extension. The old format test will not be changed by the version 2.x software, so it can still be used with the old software.

To ensure that the converted test is saved, and to change the name and directory into which it is stored, select the Test..Edit Test menu command to open up the edit test dialog box, and click the "Save As..." button to select a directory and filename into which to save the test.

2.1.9   How to create customized reports

How to create customized reports

Reports are generated using mail merge type processing. The program reads in a template file, substitutes data values and graphs in place of keywords, and writes the resulting data to an output file. The template files can be either plain text or Rich Text Format files. Plain text files can have data values but no graphs. Rich Text Format files (using extension .rtf) can contain data values and graphs, as well as any text formatting and other graphics elements that can be inserted into an RTF file.

The default templates are stored in subdirectories of the directory c:\Program Files\HanseVIEW\Templates.

See Also
Report Fields, Report Graphs

2.1.10   Report parameter names

Report parameter names

Stop code:	[PARAM:StopCode]
Profile name:	[PARAM:Testname]
Sample Frequency:	
	[PARAM:SampleFrequency]
Repeats:	[PARAM:Repeats]
Annotation line 1:	[PARAM:Note1]
Annotation line 2:	[PARAM:Note2]
Annotation line 3:	[PARAM:Note3]
Data directory:	[PARAM:DataDirectory]
Data storage settings:	[PARAM:DataStorage]
Segment table:	[PARAM:SegmentTable]
Start time:	[PARAM:StartTime]
Current time:	[PARAM:Time]
Elasped Time:	[PARAM:ElapsedTime]
Remaining:	[PARAM:Remaining]
Channel vibration:	[PARAM:Ch1Vib]
	[PARAM:Ch2Vib]
	[PARAM:Ch3Vib]
	[PARAM:Ch4Vib]

	[PARAM:Ch5Vib]
	[PARAM:Ch6Vib]
	[PARAM:Ch7Vib]
	[PARAM:Ch8Vib]
Channel fatigue:	[PARAM:Ch1Fat]
	[PARAM:Ch2Fat]
	[PARAM:Ch3Fat]
	[PARAM:Ch4Fat]
	[PARAM:Ch5Fat]
	[PARAM:Ch6Fat]
	[PARAM:Ch7Fat]
	[PARAM:Ch8Fat]
Chan Accum fatigue:	[PARAM:Ch1AFa]
	[PARAM:Ch2AFa]
	[PARAM:Ch3AFa]
	[PARAM:Ch4AFa]
	[PARAM:Ch5AFa]
	[PARAM:Ch6AFa]
	[PARAM:Ch7AFa]
	[PARAM:Ch8AFa]
Channel humidity:	[PARAM:Ch1Hum]
Product temperature:	[PARAM:Ch1Temp]
Air temperature	[PARAM:Ch2Temp]
Vibration Label	[PARAM:La1Vib]
	[PARAM:La2Vib]
	[PARAM:La3Vib]
	[PARAM:La4Vib]
	[PARAM:La5Vib]
	[PARAM:La6Vib]
	[PARAM:La7Vib]
	[PARAM:La8Vib]
Humidity Label:	[PARAM:La1Hum]
Temperature Label:	[PARAM:La1Temp]
	[PARAM:La2Temp]
Calibration data	[PARAM:Cal1]
	[PARAM:Cal2]
	[PARAM:Cal3]
	[PARAM:Cal4]
	[PARAM:Cal5]
	[PARAM:Cal6]
	[PARAM:Cal7]
	[PARAM:Cal8]
Vibration units:	[PARAM:UnitViberation]
Density units	[PARAM:UnitDensity]
Humidity units:	[PARAM:UnitHumidity]
Temperature units:	[PARAM:UnitTemperature]
Velocity units:	[PARAM:UnitVel]
Displacement units:	
	[PARAM:UnitDisplacement]

2.1.11 Report graph types

Report graph types

Graph types for Repetitive reports may be one of the following:

[GRAPH:Temp]	Temperature vs Time
[GRAPH:Vib]	Vibration rms Amplitude vs Time
[GRAPH:Fatigue]	Fatigue rate vs. Time

[GRAPH:PSD]   Power Spectral Density
[GRAPH:Sigma]   Rate vs Amplitude
[GRAPH:Time]   Accel waveform
[GRAPH:Vel]   Velocity waveform

Flags that may be applied to enable traces:

Ch1   Channel 1
Ch2   Channel 2
Ch3   Channel 3
Ch4   Channel 4
Ch5   Channel 5
Ch6   Channel 6
Ch7   Channel 7
Ch8   Channel 8
Con   SetPoint
Dem   Process Variable

Flags that may be applied to set the formatting of the graph:

W150   Select graph width, in mm (default is 150)
H100   Select graph height, in mm (default is 100)
LogX   Use a logarithmic horizontal axis (default is linear)
LogY   Use a logarithmic vertical axis (default is linear)
BW   Create a black-and-white plot (default is color)

Example:

[GRAPH:PSD,Ch1,Ch2,LogX,LogY,BW]

Part III
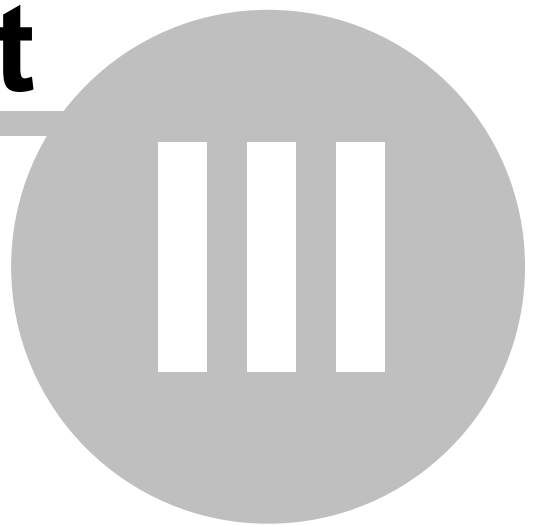
3 Menu Commands

3.1 File menu

3.1.1 File menu commands

File menu commands

The file menu is used for loading, saving, copying, and printing data files and graphs. It offers the following commands:

New Graph	a new graph.
Copy Graph	the selected graph to the windows clipboard.
Save as .. Data File	the active data set to the disk.
Save as .. Meta File	the selected graph in emf format
Save as .. Text File	the active data set to the disk as Text file.
Save as .. Matlab File	the active data set to the disk as *MatLab* file.
Save as .. Bitmap File	the selected graph in bmp format.
Save as .. PNG File	the selected graph in Portable Network Graphics format.
Open Data	a stored data file from the disk.
Previous Data	the previous data file from the disk.
Next Data	the next data file from the disk.
Close	an opened graph.
Read Old File Formats.. Profiles	test profiles created with version 1.x software.
Read Old File Formats .. Data	test Data created with version 1.x software.
Create Report	a saved report using a defined template
Print Report	a printed report using a defined template
Print Active Graph	the selected graph.
Printer Setup	a printer and printer connection.
Print Options	the graph scaling options used for printing.
Exit	

3.1.2 New Graph command (File menu)

New Graph command (File menu)

Use this command to create a new graph in HanseVIEW. A dialog box will prompt you with the types of graphs available.

For more information on the graph dialogs and graph types for the various tests, see:

Repetitive Shock Graph Settings dialog box

Shortcuts

Toolbar:
Keys: Ctrl+N

3.1.3 Copy Graph command (File menu)

Copy Graph command (File menu)

Use this command to copy the selected graph onto the clipboard. Once on the clipboard, it may be

pasted into another application, such as a word processor, using that program's Paste command.

Copying data to the clipboard replaces the contents previously stored there.

Shortcuts

Toolbar:

GRAPH

Keys: Ctrl+C

3.1.4   Save as .. Data File (File menu)

Save as .. Data File command (File menu)

Use this command to store the data to a file that may then be loaded back into HanseVIEW using the File..Open Data menu command for viewing and printing. This command will bring up a Save As... dialog box with a default file name derived from the date and time the test began and an index that is incremented every time a data set is stored. The file name may be changed if you so desire. Click on the "Save" button to save the data to a file.

Note: The live data stored in the file is that data that is displayed when the "Save" button is pressed in the Save As... dialog box. If you want to save a particular set of data (for example, a transient occurrence in an FDR playback file), click the "Save" button as soon as you see the data you want to save appear in the graphs. This data may then be loaded again for analysis. In this way, the Save Data menu command may be used as a form of freeze-frame for the live data.

Shortcuts

Toolbar:

DATA

Keys: Ctrl+S

3.1.5   Save As .. Meta File (File Menu)

Save As .. Meta File command (File Menu)

Use this command to save the currently selected graph to a file using the Meta File (emf) format. Graphs saved in this form may then be imported into another application, such as a word processor, but HanseVIEW cannot read these files, nor can the graph scales be changed.

Select the File..Save Data menu command to save the raw data for later loading and viewing in HanseVIEW, with full control over the scaling and format of the graphs.

Select the File..Copy Graph menu command to copy the graph image to the windows clipboard such that it can be directly pasted into another application.

3.1.6   Save as .. Text File (File menu)

Save As .. Text File command (File Menu)

Use this command to save the currently selected graph to a file using the Text File (txt) format. Data saved in this form may then be imported into another application, such as a word processor or spreadsheet, but HanseVIEW cannot read these files.

Select the File..Save Data menu command to save the raw data for later loading and viewing in HanseVIEW, with full control over the scaling and format of the graphs.

3.1.7 Save as .. Matlab File (File Menu)

Save As .. *MatLab* File command (File Menu)

Use this command to save the currently selected graph to a file using the *MatLab* File (mat) format. Data saved in this form may then be imported into another application, such as *MatLab*, but HanseVIEW cannot read these files.

Select the File..Save Data menu command to save the raw data for later loading and viewing in HanseVIEW, with full control over the scaling and format of the graphs.

3.1.8 Save as .. Bitmap File (File menu)

Save as .. Bitmap File command (File menu)

Use this command to save the currently selected graph to a file using the Bitmap File (bmp) format. Graphs saved in this form may then be imported into another application, such as a word processor, but HanseVIEW cannot read these files, nor can the graph scales be changed.

Select the File..Save Data menu command to save the raw data for later loading and viewing in HanseVIEW, with full control over the scaling and format of the graphs.

Select the File..Copy Graph menu command to copy the graph image to the windows clipboard such that it can be directly pasted into another application.

3.1.9 Save as .. PNG File (File Menu)

Save as .. PNG File command (File menu)

Use this command to save the currently selected graph to a file using the vector graphic (png) format. Graphs saved in this form may then be imported into another application, such as a word processor, but HanseVIEW cannot read these files, nor can the graph scales be changed.

Select the File..Save Data menu command to save the raw data for later loading and viewing in HanseVIEW, with full control over the scaling and format of the graphs.

Select the File..Copy Graph menu command to copy the graph image to the windows clipboard such that it can be directly pasted into another application.

3.1.10 Open Data comand (File menu)

Open Data command (File menu)

Use this command to read a data set previously saved in HanseVIEW using the File..Save Data menu command. An Open File dialog box will be displayed, allowing selection of the data set you wish to view. Use the Window menu to switch among the multiple open documents. See the Window 1, 2,.. menu command.

Shortcuts

Toolbar: DATA
Keys: Ctrl+O

3.1.11 Previous Data command (File menu)

Previous Data command (File menu)

Use this command to read and plot the data file stored in the same directory as the current file, but stored immediately prior to the current file. This command is available only when a graph of a stored

data file is the currently selected graph type.

This command, along with the Next Data menu command, is useful for quickly scanning through a set of data files in a directory in chronological order.

Shortcuts
Keys: Left arrow
                     Down arrow
                     Keypad Minus (-)

Hint: To see multiple types of graphs of each data file, select the Window..New menu command and the Window..Tile menu command to create and arrange multiple graphs before using this command to scan through the files.

3.1.12 Next Data command (File menu)

Next Data command (File menu)

Use this command to read and plot the data file stored in the same directory as the current file, but stored immediately after the current file. This command is only available when a graph of a stored data file is the currently selected graph type.

This command, along with the Previous Data menu command, is useful for quickly scanning through a set of data files in a directory in chronological order.

Shortcuts
Keys: Right arrow
                     Up arrow
                     Keypad Plus (+)

Hint: To see multiple types of graphs of each data file, select the Window..New menu command and the Window..Tile menu command to create and arrange multiple graphs before using this command to scan through the files.

3.1.13 Read Old File Formats..Profiles command (File menu)

Read Old File Formats .. Test Profiles command (File menu)

Use this command to read test profiles created using version 1.x of HanseVIEW. An Open File dialog box will be displayed, allowing selection of the test to load.

If the test has not previously been converted to the format used in version 2.x of HanseVIEW, a new file will be created with the same base file name, but with the filename extension changed according to the following table:

This command will not change the version 1.x format file, so that file may still be used with the older software. Also, this command will not overwrite any files. To force HanseVIEW to overwrite a test file, load the file into HanseVIEW, then use the Test..Edit Test menu command to edit the test and click the "Save As..." button in the Edit Test dialog box.

3.1.14 Read Old File Formats..Data command (File menu)

Read Old File Formats .. Data command (File menu)

Use this command to read data sets created using version 1.x of the HanseVIEW software. An Open File dialog box will be presented, allowing selection of the data set to read.

3.1.15 Create Report Command (File Menu)

Create Report Command (File Menu)

This command will create a document with a variety of useful information and graphs. The information saved depends on the template that you choose.

To create a report select the File..Create Report menu command, choose a template, decide where to store the report and under what name, and click the "OK" button.

See also: How to create customized reports

3.1.16 Print Report Command (File Menu)

Print Report Command (File Menu)

This command will create a report using the same templates that the Create Report Command uses but instead of storing it, the report will be printed on the default printer.

To print a report, select the File..Print Report menu command, choose a template and click the "OK" button.

See also: How to create customized reports

3.1.17 Print Active Graph Command (File menu)

Print Active Graph command (File menu)

Use this command to print a graph to the printer. A printer selection dialog box (see Printer Setup for a description of this dialog) will be presented, allowing selection of the printer and layout options. See also the Printer Setup and the Print Options menu commands. The function key <F12> can also be used to create a screen dump on the printer

Shortcuts

Toolbar:
Keys: Ctrl+P,<F12>

3.1.18 Printer Setup ... command (File menu)

Printer Setup..command (File menu)

The following options allow you to select destination printer and its connection. Changes made using this command will be used as the default settings for all subsequent Print commands.
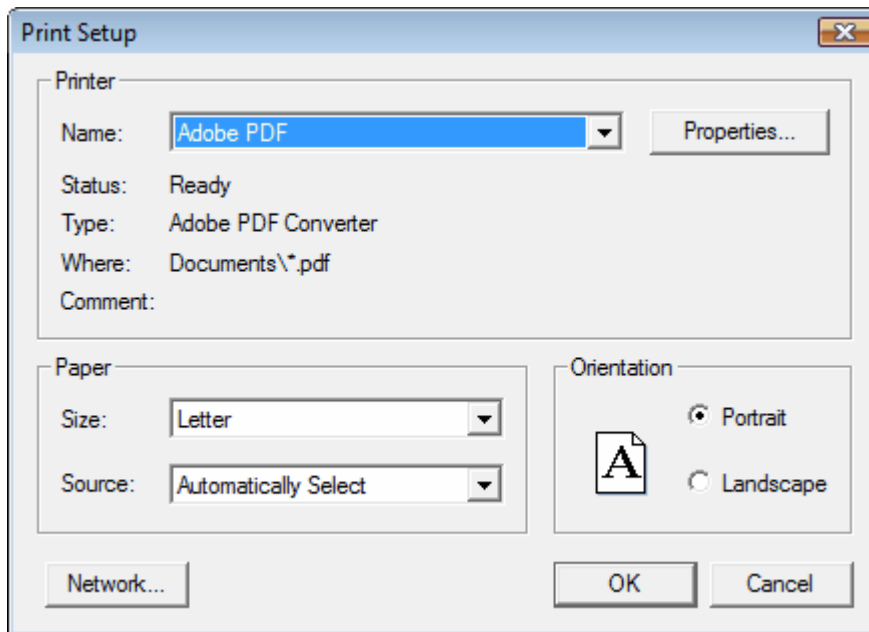
Name
> Select the printer you want to use. Select the Default Printer; or select the Specific Printer option and select one of the current installed printers shown in the dialog box. You can install printers and configure ports using the Windows Control Panel.

Properties
> Displays a dialog box where you can make additional choices about printing, specific to the type of printer you have selected.

Paper Size
> Select the size of the paper on which the document is to be printed.

Paper Source
> Some printers offer multiple trays for different paper sources. Specify the tray here.

Orientation
> Select Portrait or Landscape.

3.1.19 Print Options command (File menu)

Print Options command (File menu)

This command brings up the Print Parameters dialog box that may be used to change the way graphs are printed.
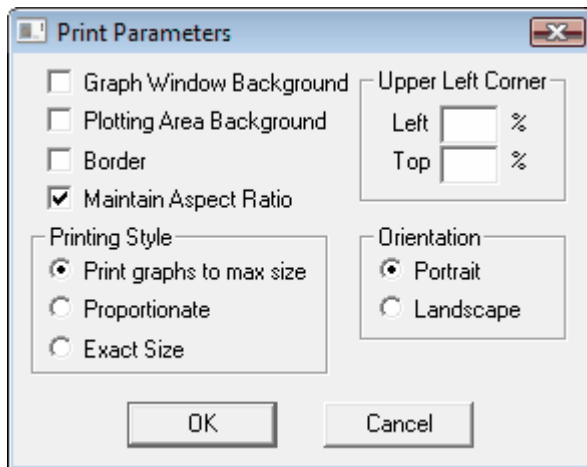
The following settings may be made:

Graph Window Background
If this box is checked, the background color of a graph is printed otherwise it is ignored. By default this box is not checked.

Plotting Area Background
If this box is checked, the background color of a graph's plotting area is printed otherwise it is ignored. By default this box is not checked.

Border
If this box is checked, a graph is printed with a rectangular border around it. By default this box is not checked.

Maintain Aspect Ratio
If this box is checked, the aspect ratio is maintained when printing with Print graphs to max size and Proportionate printing styles. Otherwise the graph is mapped to the full printed page, and the aspect ratio may change. By default this box is checked.

Upper Left Corner
X- and Y-position of the left-upper corner of the page relative to the paper sheet width. A Left value of 0.0 indicates that the page will be printed starting at the left side of the paper sheet. A Top value of 0.0 indicates that the page will be printed starting at the left side of the paper sheet. This parameter is only used if the Exact Size printing style is selected.

Print graphs to max size
Proportionate
(These two options are equivalent for graphs printed by HanseVIEW.)
Print the graphs with the maximal size that a paper sheet allows. These options will scale the text and symbols so that their size relative to other objects remains constant.

Exact Size
Printed graphs will maintain their original sizes. Only this option guarantees that text and symbols will be printed with their specified size.

3.1.20 Explorer command (File menu)

Explorer command (File Menu)

This command will open a Windows Explorer window to allow you to copy/move/rename files.

3.1.21 Exit (File Menu)

Exit command (File menu)

Use this command to end your HanseVIEW session. You can also use the Close command on the application system menu.

Shortcuts
Mouse: Click the X in the upper right corner of the HanseVIEW window:

Or: Double-click the application's system menu.

Keys: Alt+F4

3.2   Configuration menu

3.2.1   Configuration menu commands

Configuration menu commands

The configuration menu is used to set the characteristics and limits of the shaker system. It offers the following commands:

Parameters   System Configuration Parameters
Remote Inputs   Remote Input Options
Channel Labels   Channel and Loop Labels
System Calibration   System Calibration
Temperature Calibration   Optional Thermocouple calibration
Accelerometer Sensitivity Accelerometer Sensitivity
Units   SI/ English/ User Units
Controller PID   PID settings for loop controller.

3.2.2   Parameters command (Configuration menu)

Parameters command (Configuration menu)

This command opens the Parameters tab on the HanseVIEW Configuration dialog box.

Use this dialog box to set global system parameters including the type of I/O hardware and the serial port used by the controller.

The emergency stop input is an optional feature (part of the Remotef Input package).

See Also:
How to install the Hardware
How to install the software

3.2.3 Remote Inputs command (Configuration menu)

Remote Inputs command (Configuration menu)

This command opens the Remote tab on the HanseVIEW Configuration dialog box.

Configuration

| Temp Calibration | Accel Sensitivity | System Units |
| Parameters | Remote | Labels | Calibration |

Remote Start/Stop Disabled ▾   Remote Selection Disabled ▾   I/O Check

0	C:\Program Files\Default.vcp	Browse
1		Browse
2		Browse
3		Browse
4		Browse
5		Browse
6		Browse
7		Browse
8		Browse
9		Browse
10		Browse
11		Browse
12		Browse
13		Browse
14		Browse
15		Browse

OK   Cancel   Apply   Help
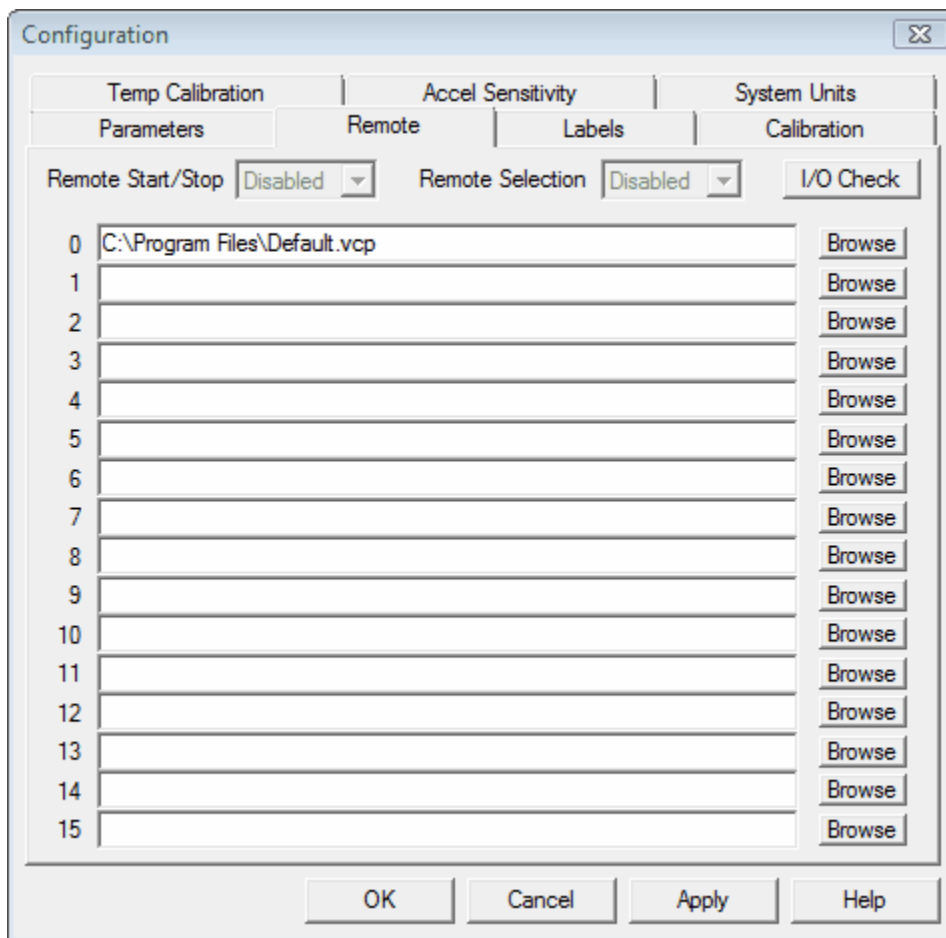
Use this dialog box to enable and configure the remote input option. This option requires DaqBoard/2000 or DaqLab hardware.

Discrete Input 0: Remote Start/Stop Signal

The Remote Input options allow a remote TTL level input signal to start and stop the test. To use this feature, connect the remote input signal to Discrete Input 0 on the back of the HanseVIEW IO unit. Then enable remote input by selecting "Enabled" next to the *Remote Start/Stop* label of the above dialog (in the upper left corner of the dialog).

Once this feature has been enabled, the test may be started and stopped using a remote input. When the input signal to Discrete Input 0 makes a transition from 0 volts to +5 volts, the test will start. When the input signal to Discrete Input 0 makes a transition from +5 volts to 0 volts, the test will stop.

You may also operate the remote input through a relay, using the relay to switch the Discrete Input 0 signal between +5V and ground.

Discrete Input 1: Emergency Stop Signal

The emergency stop input is an optional feature (part of the Remote Input package) that connects to Digital Input 1. When this input is low (below 2 volts) the outputs of the I/O unit are immediately brought to 0 volts to stop the drive signal going to the amplifier. Typically this input is connected to +5V through a normally closed red mushroom button. When the mushroom button is pressed, the connection to +5V is opened and Digital Input 1 is pulled to ground by a pull-down resistor inside the HanseVIEW I/O unit. This causes the shaker drive signal to be immediately shut down.

Discrete Inputs 4,5,6,7: Remote Test Selection

When *Remote Selection* is enabled in the above dialog box (upper right corner of the dialog), a test is automatically loaded when the remote input signal is used to start a test. This may be used to select different tests using remote electronics such as a PLC. Remote test selection is performed using discrete inputs 4, 5, 6, 7 according to the following table, where a 0 and 1 indicate TTL voltage levels of 0 volts and 5 volts, respectively (threshold level is 2.2 volts). For each test number listed in the table below, there is a corresponding line in the Remote Input configuration dialog box configuring the name of the test to load.

DI7	DI6	DI5	DI4	Test number
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9
1	0	1	0	10
1	0	1	1	11
1	1	0	0	12
1	1	0	1	13
1	1	1	0	14
1	1	1	1	15

3.2.4 Configure Channel Labels

Channel Labels command (Configuration menu)

This command opens the Channel Label tab on the HanseVIEW Configuration dialog box.

Default channel labels are defined for each channel. The current test must be saved to retain channel information changed from this menu. Any new tests will default to the labels entered into this dialog.

3.2.5 System Calibration command (Configuration menu)

System Calibration command (Configuration menu)

This command opens the Calibration tab on the HanseVIEW Configuration dialog box.

Enter the reading error into the offset box. For example if after installing a shunt across the input channel the channel reads 0.1Grms enter 10 into the offset box (assuming the accelerometer is 100mV/G and Gain Multiplier is set to 1.0)

Enter the scale error into the Gain Multiplier Box. For example if you feed a calibration signal of 1.0Volts rms into the channel and get a reading of 10.5Grms enter a value of 1.05 to correct the scale error. (assuming the accelerometer is 100mV/G and Gain Multiplier is set to 1.0)

The AZ button will autozero a channel. First install a shunt across the input terminal. Press AZ to automatically enter the correct offset into the dialog box

The AG button will automatically calculate the gain multiplier. First attach a 1Vrms Sinusoidal signal at 1kHz to the input. Press the AG button to automatically calculate the correct gain multiplier.

3.2.6   Temperature Calibration command (Configuration menu)

Temperature Calibration command (Configuration menu)

This command brings up the Temperature Calibration tab on the HanseVIEW Configuration box.

This command is used to calibrate the input scaling factors and offsets, the output scaling factor for the optional 14 thermocouple channels..

3.2.7 Accelerometer Sensitivity command (Configuration menu)

Accelerometer Sensitivity command (Configuration menu)

This command brings up the Accel Sensitivity tab on the HanseVIEW Configuration dialog box.

Use this dialog box to enter the calibrated sensitivity ratings for your accelerometers in mV/G.

3.2.8   Units command (Configuration menu)

Units command (Configuration menu)

This command brings up the System Units tab on the HanseVIEW Configuration dialog box.

Use this dialog box to select and define the desired units to be used by the program. Changing the units will stop any active test.

Select the desired units for Acceleration, Velocity, Displacement, Force, Mass and Acceleration Spectral Density. If the listed units are not appropriate for your test, custom units may be defined by entering a label in the upper box (between the 1 and the =), and the appropriate scaling factor from the SI unit in the lower box. The unit label and scale factor must make the equation correct. For example:
  1 oz = 0.02835 kg
Use this command to select and define the desired units to be used by the program.

3.2.9   Controller PID (Configuration menu)

Controller PID command (Configuration menu)

This command opens the Controller PID dialog Box.

Control Parameters

Product
Heat
Proportional
0.000000
Integral
0.000000
Derivative
0.000000

Cool
Proportional
0.000000
Integral
0.000000
Derivative
0.000000

Vibration
Proportional
0.000000
Integral
0.000000
Derivative
0.000000

Humidity
Proportional
0.000000
Integral
0.000000
Derivative
0.000000

Air
Heat
Proportional
0.000000
Integral
0.000000
Derivative
0.000000
Max Boost
0.000000

Cool
Proportional
0.000000
Integral
0.000000
Derivative
0.000000
Max Boost
0.000000

Get Parameters

Send Parameters

Hide Window

Use Get Parameters Pushbutton to retrieve parameters for loop controller
Enter modified values into respective boxes
Use Send Parameters Pushbutton to accept modified values and send to loop controller

Proportional Band: Define a band for PID control, entered in degrees or units.
 Lower values increase gain, which reduces droop but can cause oscillation.
Increase the proportional band to eliminate oscillation.

Integral (Reset): Define the integral time in minutes per repeat; define reset in repeats per minute.
Set repeats per minute if units are U.S.minutes per repeat if units are SI.

Derivative (Rate): Define the derivative (rate) time in minutes.
Large values prevent overshoot but can cause sluggishness.
Decrease if necessary.

Max Boost: In deviation cascade mode max boost will determine the maximum the air loop will
deviate above and below the setpoint. The cool deviation should always be negative

3.3   Test menu

3.3.1   Test menu commands

Test menu commands

The test menu is used to select, load, save, start, and stop tests. It offers the following commands:

Select Test Type   Chamber type test.
Run Test   running the current test.
Stop Test   the current test.
Advance to next level   to the beginning of the next level.
Test Schedule   and run a list of tests to run in sequence.

New Test   a new test profile.
Open Test   an existing test profile.
Open Recent Test   displays recently used test
Edit Test   the current test.

3.3.2   Select Test Type command (Test menu)

Select Test Type command (Test menu)

Use this command to select type of test you will be running. The HanseVIEW Test Type dialog box will appear, allowing selection of the test type. The different test types are software options that are protected by a hardware key. If your hardware key does not have an option enabled, you will still be able to switch to that mode, define profiles, and load and plot data sets, but you will not be able to run the test. Contact Vibration Research Corp. for information on options that are not enabled. If you are running HanseVIEW, your test types are limited to Repetitive Shock.
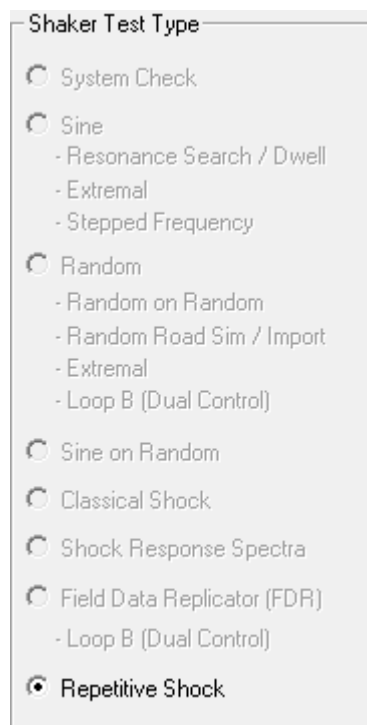
Shortcuts:

3.3.3   Run Test command (Test menu)

Run Test command (Test menu)

Use this command to start the current test. See also: Stop Test

Shortcuts

Toolbar:

Controls:
Keys: F9

3.3.4 Stop Test command (Test menu)

Stop Test command (Test menu)

Use this command to stop any running test. See also: Run Test

Shortcuts

Toolbar:

Controls:
Keys: F10

3.3.5 Advance to next level (Test menu)

Advance to next segment command (Test menu)

Use this command while a test is running to skip the remaining time in the current segment and to begin the next segment.

Shortcuts
Keys: F11

3.3.6 Test Schedule command (Test menu)

Test Schedule command (Test menu)

Use this command to build a schedule of tests. To create a test schedule, first define the tests, and then use this command to bring up the Test Schedule dialog box to add the tests to the test sequence.

This dialog box is accessed by selecting the Test..Test Schedule menu command.
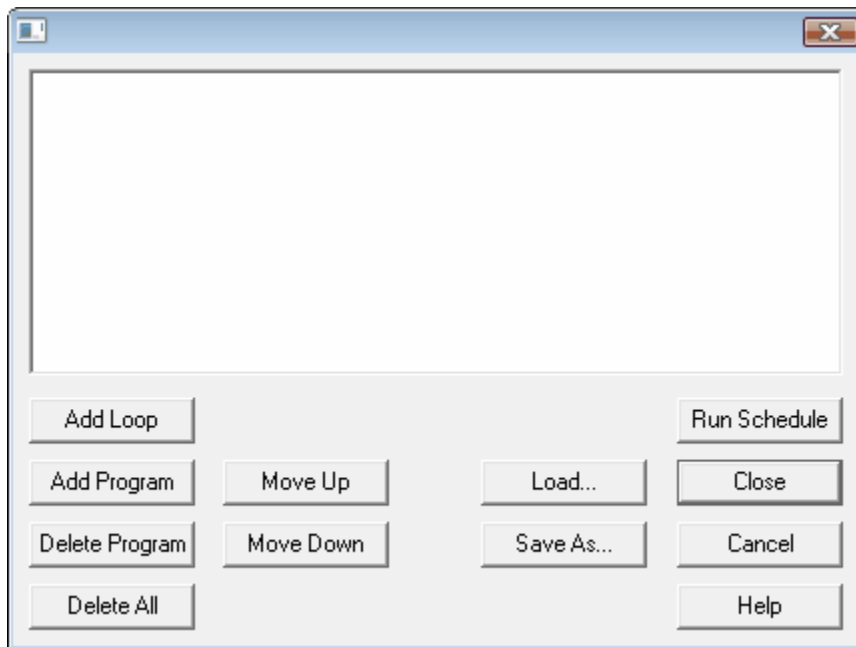
Use this dialog box to build a schedule of tests to run in sequence. The tests will be run in the listed order, with each test running for the duration specified within the individual test's schedule. There will be a pause of approximately 5 seconds between each test.

The schedule will be aborted if a test is shut down prior to completion of the schedule. (For example, if the operator presses the "Stop" button, or a test encounters an error condition.)

Click the "Run Schedule" button to run all tests beginning with the first test. If you want to start the schedule at a specific test, first select that test, and then click the "Run Schedule" button.

To add programs to the test schedule, select the test you want the new test to follow, and click the "Add Program" button. You will be prompted for a test name. When you click the "Open" button, that test will be added to the schedule.

To remove programs from the test schedule, select the test you want to remove, and then click the "Delete Program" button. Click the "Delete All" button to clear all entries in the list.

To repeat a sequence of tests multiple times, select the last test you want in the repeat sequence, and then click the "Add Loop" button. A Schedule Loop dialog will appear prompting you for the first test in the sequence and the number of times you want the sequence performed.

To change the settings of an existing loop, select loop in the schedule, and then click the "Add Loop" button.

Test schedules may be saved on the hard disk by clicking the "Save As..." button, and later loaded back in by clicking the "Load..." button.

3.3.7   New Test command (Test menu)

New Test command (Test menu)

Use this command to have the program guide you through a series of dialog boxes to define a new test. All values are initialized to their defaults, and may then be changed as required by your test.

If your new test is substantially similar to another test you have already defined, open a similar test using the Test..Open Test menu command, and then use the Test..Edit Test menu command to bring up the Define Test dialog. Use the "Save As..." button in that dialog box to save the test under a new name.

Shortcuts

Toolbar:

3.3.8 Open Test command (Test menu)

Open Test command (Test menu)

Use this command to open any previously defined and saved test profile.

Shortcuts

Toolbar:

3.3.9 Open Recent Test command (Test menu)

Open Recent Test command (Test menu)

This command brings up a pop-up submenu with a list of the 10 most recently used tests. To open one of the tests listed, click on it with the mouse.

3.3.10 Edit Test command (Test menu)

Edit Test command (Test menu)

This command opens the Define Test dialog box allowing the user to edit the currently loaded test.

You can also open a previously defined test, or save the test under a different name from the Define Test dialog.

Shortcuts

Toolbar:

3.4 Graph menu

3.4.1 Graph Menu Commands

Graph menu commands

The graph menu is used to adjust the display of graphs and cursors. It offers the following commands:

Graph Colors   the default colors used by the graphs.
Graph Update Time   the graph update interval.
Pause Graph Updates   /resume the automatic updating of the graphs
Edit Graph Settings   the lines and type of graph for the selected graph.
Y-Axis Autoscale   the amplitude axis of the selected graph.
Full Autoscale   both axes of the selected graph.
Refresh Graph   the selected graph.

3.4.2 Graph Colors command (Graph menu)

Graph Colors command (Graph menu)

This dialog box is accessed by selecting the Graph..Graph Colors menu command.
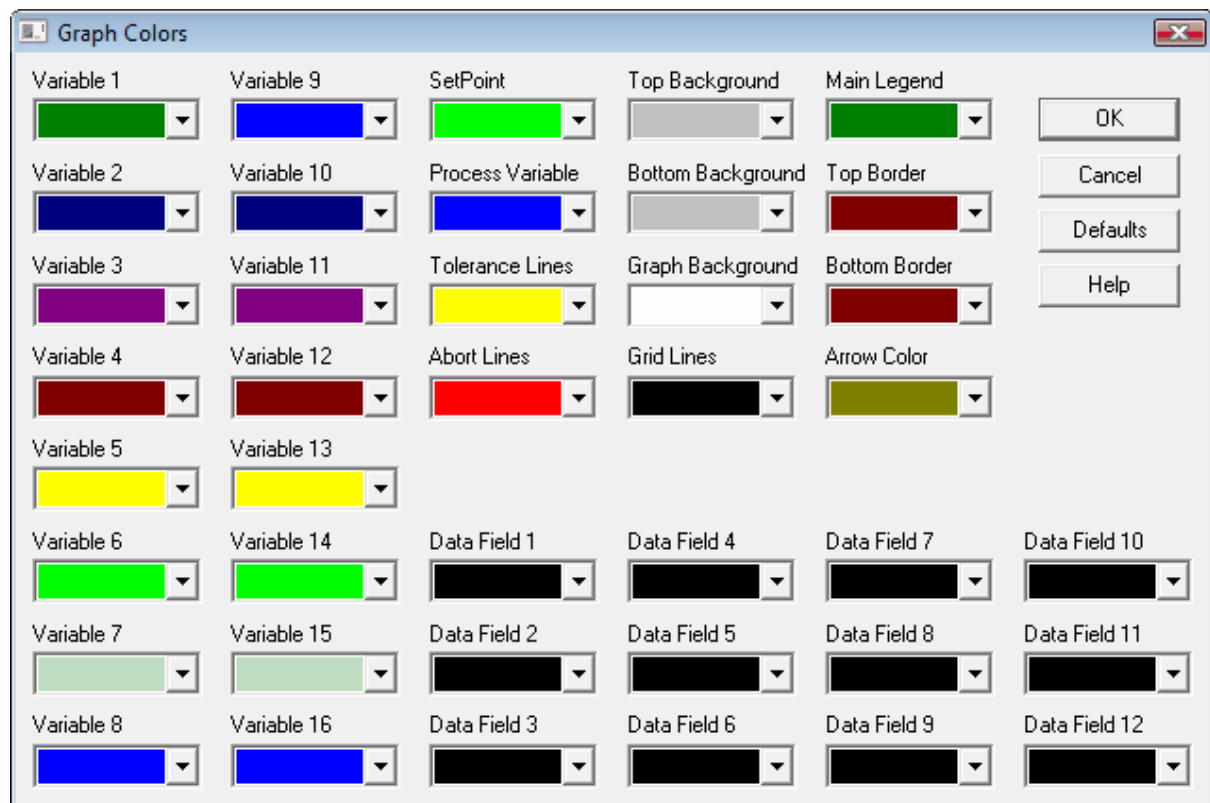
Use this dialog box to set the default colors for various components of the graphs.

Changes made here will only affect graphs created after changing the colors - already open graphs will retain the old settings. To update the colors on any already-open graph, select the graph, press Ctrl+G (Edit Graph Settings command), and then click the "OK" button.

3.4.3 Graph Update Time command (Graph Menu)

Graph Update Time command (Graph menu)

The value specified is the number of milliseconds between graph updates. The default value is 1000 ms (i.e. 1 second).

3.4.4 Pause Graph Updates (Graph menu)

Pause Graph Updates (Graph menu)

Use this command to manually pause or resume the automatic graph refreshes.

Shortcuts
　　Keys:　　　　　　Ctrl+P

3.4.5 Edit Graph Settings command (Graph menu)

Edit Graph Settings command (Graph menu)

Use this command to open the Graph Settings dialog box appropriate for the currently selected graph. You may then modify the type of graph, the traces displayed on the graph and the axis settings. Click the "OK" button to have the graph rebuilt with these new settings.

See also:

Repetitive Shock Graph Settings dialog box

Shortcuts

Toolbar:
Keys: Ctrl+G

3.4.6 Y-Axis Autoscale command (Graph menu)

Y-Axis Autoscale command (Graph menu)

Use this command to automatically set the vertical (Y-axis) scale such that the data shown in the current plot fits on the display.

See also: Full Autoscale

Shortcuts
Keys: Ctrl+A

3.4.7 Full Autoscale command (Graph menu)

Full Autoscale command (Graph menu)

Use this command to automatically set both horizontal and vertical axis scales such that the traces of the selected graph fit on the screen.

See also: Y-Axis Autoscale

Note: You can zoom into a region of the graph by clicking with the right mouse button on one corner of the desired view, holding the button down while moving the mouse to enclose the desired region, and then releasing the right mouse button.

Shortcuts

Toolbar:
Keys: Ctrl+F
Mouse: Double-click the right mouse button

3.4.8 Refresh Graph command (Graph menu)

Refresh Graph command (Graph menu)

Use this command to redraw the selected graph.

Shortcuts
Keys: F5

3.5   Cursor menu

3.5.1   Cursor Menu Overview

Cursor Menu commands

This menu is used to configure cursors. It offers the following commands:

Display Cursor Window	the cursor window on and off
Set Base Cursor	the fixed cursor at the current mouse position
Next Differential Cursor	through the various cursor modes
Prev Differential Cursor	backwards through the various cursor modes
Standard Cursor	a window with the data at the current cursor location
Delta Cursor	the difference between two cursors
Slope Cursor	rate of change between two cursors
Minimum Cursor	minimum value between two cursors
Maximum Cursor	maximum value between two cursors
Mean Cursor	mean value between two cursors
Dual Cursor	values at each of two cursors
RMS Cursor	the RMS value between two cursors
Add Annotation	a graph annotation at the current cursor location
Move Annotation	the currently selected graph annotation
Remove Annotation	the currently selected graph annotation
Remove All Annotations	all annotation strings from the active graph

Tips:
*   To use the dual cursor modes (Delta, Slope, Minimum, Maximum, Mean, Dual and RMS) move the cursor to the FIRST cursor location.
*   Use the <Home> key to lock the cursor in this position.
*   Holding down the <Shift> key while moving the mouse snaps the cursor to the nearest peak. Pressing the <Home> key while holding down the <Shift> key locks the first cursor at the location of the peak.
*   Holding down the <Ctrl> key while moving the mouse snaps the cursor to the nearest valley. Pressing the <Home> key while holding down the <Ctrl> key locks the first cursor at the location of the valley.
*   After locking the FIRST cursor, use the mouse to move the primary cursor. The calculated values between the two cursors are displayed in the cursor window (depending on the cursor mode).
*   Use the <Home> key at any point to move the FIRST cursor to the current primary cursor location.
*   Use <PgUp> and <PgDn> to cycle through the cursor modes.
*   Use annotations to display multiple cursor intervals on the screen. Annotations will display any of the special mode cursors and update on live graphs.

3.5.2   Cursor Display command (Graph menu)

Display Cursor Window command (Graph menu)

Use this command to bring up the Cursor Display box that shows the values for the graph traces at the current cursor position.

Holding down the <Shift> key while moving the cursor with the mouse snaps the cursor to the nearest peak.

Holding down the <Ctrl> key while moving the cursor with the mouse snaps the cursor to the nearest valley.

Shortcuts
    Keys: Ctrl+D

3.5.3 Set Base Cursor

Set Base Cursor command (Cursor menu)

Use this command to lock the dual cursor at the current cursor position. The primary cursor then moves freely with the mouse.

Holding down the <Shift> key while moving the cursor with the mouse snaps the cursor to the nearest peak.

Holding down the <Ctrl> key while moving the cursor with the mouse snaps the cursor to the nearest valley.

Shortcuts
    Keys: <Home>

3.5.4 Next Differential Cursor Command

Next Differential Cursor command (Cursor menu)

Use this command to cycle the dual cursor to the next cursor mode.

The cursor modes are:

Standard Cursor	a window with the data at the current cursor location
Delta Cursor	the difference between two cursors
Slope Cursor	rate of change between two cursors
Minimum Cursor	minimum value between two cursors
Maximum Cursor	maximum value between two cursors
Mean Cursor	mean value between two cursors
Dual Cursor	values at each of two cursors
RMS Cursor	the RMS value between two cursors

Shortcuts
    Keys: <PgUp>

3.5.5 Prev Differential Cursor command (Cursor menu)

Previous Differential Cursor command (Cursor menu)

Use this command to cycle the dual cursor to the previous cursor mode.

The cursor modes are:

Standard Cursor	a window with the data at the current cursor location
Delta Cursor	the difference between two cursors
Slope Cursor	rate of change between two cursors
Minimum Cursor	minimum value between two cursors
Maximum Cursor	maximum value between two cursors
Mean Cursor	mean value between two cursors
Dual Cursor	values at each of two cursors
RMS Cursor	the RMS value between two cursors

Shortcuts
    Keys: <PgDn>

3.5.6   Standard Cursor command (Cursor menu)

Standard Cursor command (Cursor menu)

Display a window with the data of the current cursor location.

Shortcuts
Keys: <End>

3.5.7   Delta Cursor command (Cursor menu)

Delta Cursor command (Cursor menu)

Display the difference between two cursors.

3.5.8   Slope Cursor command (Cursor menu)

Slope Cursor command (Cursor menu)

Display the rate of change between two cursors.

3.5.9   Minimum Cursor command (Cursor menu)

Minimum Cursor command (Cursor menu)

Display the minimum value between two cursors.

3.5.10   Maximum Cursor command (Cursor menu)

Maximum Cursor command (Cursor menu)

Display the maximum value between two cursors.

3.5.11   Mean Cursor command (Cursor menu)

Mean Cursor command (Cursor menu)

Display the mean value between two cursors.

3.5.12   Dual Cursor command (Cursor menu)

Dual Cursor command (Cursor menu)

Display values at each of two cursors.

3.5.13   RMS Cursor command (Cursor menu)

RMS Cursor command (Cursor menu)

Compute the RMS value between two cursors.

3.5.14   Add Annotation command (Graph menu)

Add Annotation command (Graph menu)

Use this command to annotate the current graph with the trace values at the current cursor position. To display a vertical cursor bar to help with selection of data, turn on the cursor display using the Graph..Cursor Display menu command.

Tips:

- To accurately place an annotation, first use the right mouse button (click, drag, release) to zoom in on the region of interest. Add the annotation by positioning the cursor and pressing the <Insert> key. Zoom out by double-clicking the right mouse.
- To move an annotation, click on the annotation with the left mouse button, hold the button down, move the mouse to the new location, and release the left mouse button.
- Holding down the <Shift> key snaps the cursor to the nearest peak. Press the <Insert> key while holding down the <Shift> key to put an annotation at the location of the peak.
- Holding down the <Ctrl> key snaps the cursor to the nearest valley. Press the <Insert> key while holding down the <Ctrl> key to put an annotation at the location of the valley.
- After creating an annotation you can double-click it (using the left mouse button) to edit the text.

See also: Cursor Display, Remove Annotation, Move Annotation

Shortcuts

Keys:	Insert	
	F8	
	Shift-Insert	Insert annotation at the nearest peak
	Ctrl-Insert	Insert annotation at the nearest valley

3.5.15 Remove Annotation command (Graph menu)

Remove Annotation command (Graph menu)

Use this command to remove the currently selected annotation. First click on the annotation (a black rectangle will briefly encircle the text) and then use this command to remove the annotation.

See also: Add Annotation, Move Annotation

Shortcuts

Keys:	Delete
	F7

3.5.16 Remove All Annotation command (Graph Cursor)

Remove All Annotation command (Graph menu)

Use this command to remove the all annotations.

3.5.17 Move Annotation command (Graph menu)

Move Annotation command (Graph menu)

Use this command to change the position of the currently selected annotation. First click on the annotation text (a black rectangle will briefly encircle the text), and then use this command to start the move. Move the mouse pointer to the desired location for the annotation, and click the left mouse button to complete the move.

Tip: You can also move an annotation by pointing to the annotation text with the mouse, clicking the left mouse button, holding that button down while moving the mouse cursor to the desired location and releasing the button to complete the move.

See also: Add Annotation, Remove Annotation

Shortcuts

Mouse:	Click and drag the annotation
Keys:	F4

3.6   View menu

3.6.1   View menu commands

View menu commands

The View menu offers the following commands:

Toolbar	show or hide the toolbar.
Status Bar	show or hide the status bar.
Control buttons	show or hide the active Control Center
Reset Control buttons	reset the control window to the default location
ToolTips	enable or disabled ToolTips
Chamber Big Display	Big display of Process Variables and Setpoints
Cursor Display	and hides the Cursor Window
Temperature 3-16	optional temperature board in installed, displays toolbar with temperature channels 3-16. Required Temperature extender option.
Accels 1-4	sets of 4 channels of acceleromers as a toolbar, If more than 4 channels are included in system, additional displays may be available

3.6.2   Toolbar command (View menu)

Toolbar command (View menu)

Use this command to show or hide the Toolbar that includes buttons for some of the most common commands in HanseVIEW, such as the File..Open Data menu command. A check mark appears next to the menu item when the Toolbar is shown.

The toolbar is displayed across the top of the application window, below the menu bar. The toolbar provides quick mouse access to many tools used in HanseVIEW,

Click: **To:**

Change the test type (Test..Select Test Type)

Create a new test (Test..New Test)

Open an existing test (Test..Open Test)

Edit the current test (Test..Edit Test)

Open a stored data file (File..Open Data)

Save the current data to a file (File..Save Data)

Create a new graph (File..New Graph)

Autoscale the selected graph (Graph..Full Autoscale)

Edit the selected graph's settings (Graph..Edit Graph Settings)

Copy the selected graph to the windows clipboard (File..Copy Graph)

Print the selected graph (File..Print)

Stop the current test (Test..Stop Test)

Show the opening screen of the help file (Help..Help)

Context sensitive help (Help..What's This?)

3.6.3 Status Bar command (View menu)

Status Bar command (View menu)

Use this command to show or hide the Status Bar that describes the action to be executed by the selected menu item or depressed toolbar button and keyboard latch state. A check mark appears next to the menu item when the Status Bar is shown.

Status Bar

Ready   Chamber   Default   0x01a0

The status bar is displayed at the bottom of the HanseVIEW window.

The left area of the status bar describes actions of menu items as you use the arrow keys to navigate through menus. This area similarly shows messages that describe the actions of toolbar buttons and the meaning of numbers as you move the mouse over the buttons and numbers, respectively. When the mouse is not over a toolbar or menu, this area displays the current stop code.

The three other areas of the status bar indicate, from left to right, the current test type (e.g. Chamber), the name of the currently loaded test (e.g. Default), and the serial number of this controller machine (e.g. 0x0001).

3.6.4 Control Buttons command (View menu)

Control buttons command (View menu)

Use this command to show or hide the active Control Center that contains buttons for starting and stopping tests, and also contains the current test measurements. A check mark appears next to the menu item when the Control Center is shown.

See the following for help on the various Control Centers:

- Chamber Control Center
- Repetitive Shock Information
- Additional 14 Channels of Temperature Information

3.6.5 Reset Control Buttons command (View menu)

Reset Control buttons command (View menu)

Use this command to reset the size and position of the Control Center that contains buttons for starting and stopping tests, and also contains the current test measurements. Use this command if you accidentally move the Control Center to the edge of the screen and aren't able to select it to move it.

3.6.6 ToolTips command (View menu)

ToolTips command (View menu)

Use this command to enable or disable display of tooltips in the toolbar and the Control Centers. A tooltip is a small window that displays context sensitive help information when you point the mouse at a button on the toolbar. A check mark appears next to this menu item when tooltips are enabled.

3.6.7 View Chamber Big Display command (View menu)

View Big Display (View menu)

Use this command to show or hide the Big Display dialog.
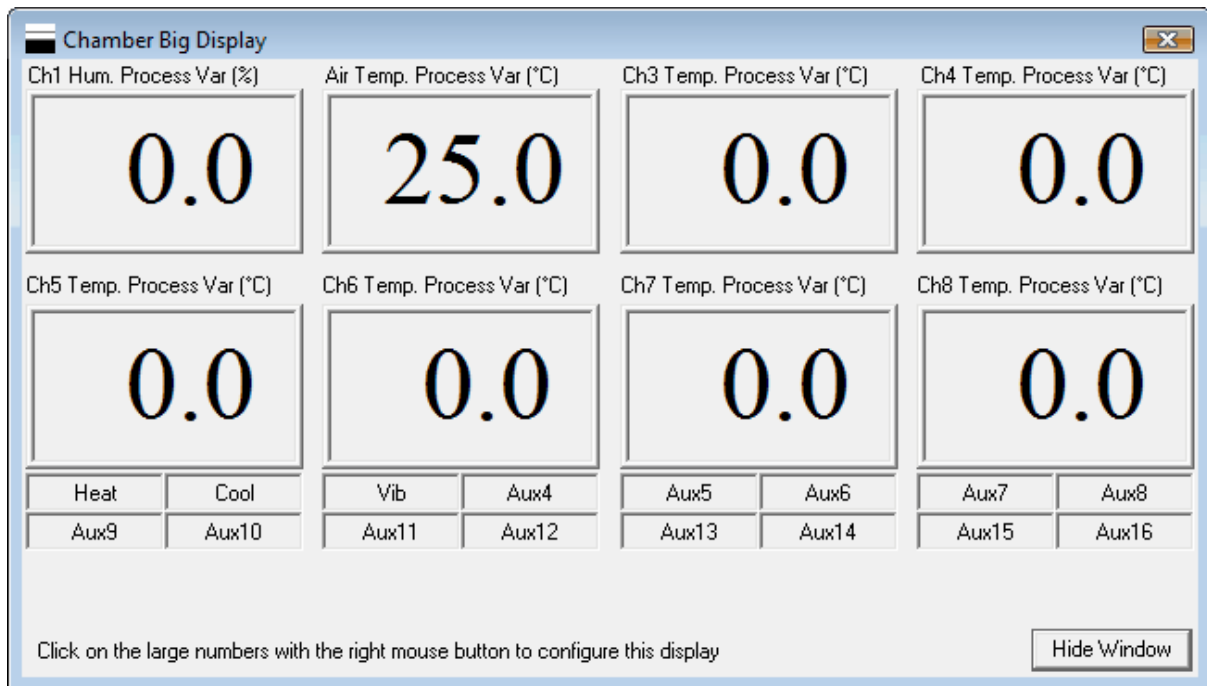
Click on the large numbers with the RIGHT mouse button to configure the display.

3.6.8 Cursor Display command (View Menu)

Cursor Display (View menu)

Show or hide the cursor display.
This dialog box will display the values of the graph data at the cursor position in the currently selected graph.

```
Graph Cursor                    ⊠
Freq:    341.8    hz
X Axis:  1e-020   G²/Hz
Y Axis:  1e-020   G²/Hz
Z Axis:  1e-020   G²/Hz
```
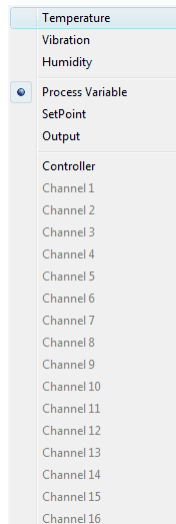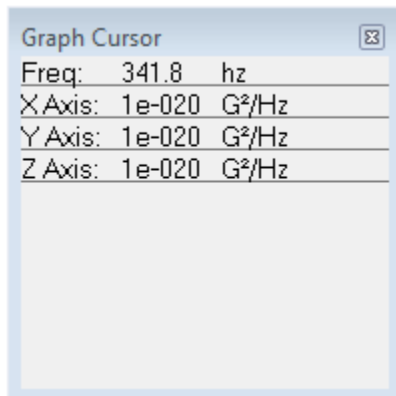
3.6.9 Temperatures (3-16) command (View Menu)

Temperatures (3-16) command (View menu)

Show or hide the thermocouples display of the optional 14 channel thermocouple input.

```
Ch3        Ch4        Ch5        Ch6
 -    °C    -    °C    -    °C    -    °C
Ch7        Ch8        CH9        CH10
 -    °C    -    °C    -    °C    -    °C
CH11       CH12       CH13       CH14
 -    °C    -    °C    -    °C    -    °C
CH15       CH16
 -    °C    -    °C
```
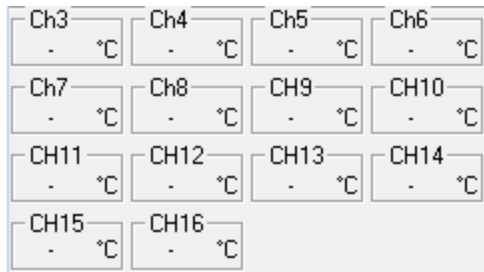
3.6.10 Accelerometers (1-4) command (View Menu)

Accelerometers (1-4) command (View menu)

Show or hide the repetitive shock control center.

```
X Axis      Y Axis      Z Axis      Ch4
G RMS       G RMS       G RMS       G RMS
  0.00        0.00        0.00         -
Fatigue     Fatigue     Fatigue     Fatigue
  0.000       0.000       0.000        -
```

3.7 Window menu

3.7.1 Window menu commands

Window menu commands

The Window menu offers the following commands that allow you to arrange multiple views of multiple documents in the application window:

New Window	a new window that views the same document.
Cascade	windows in an overlapped fashion.
Tile Horizontal	windows in non-overlapped tiles, horizontally.
Tile Vertical	windows in non-overlapped tiles, vertically.
Arrange Icons	icons of closed windows.
Window 1, 2, ...	to specified window (graph).

3.7.2   New Window command (Window menu)

New Window command (Window menu)

Use this command to open a new window with the same data as the active window. You can open multiple document windows to display different views of a data set at the same time. If you change the contents in one window, all other windows containing the same data set reflect those changes. When you open a new window, it becomes the active window and is displayed on top of all other open windows.

3.7.3   Cascade command (Window menu)

Cascade command (Window menu)

Use this command to arrange multiple open windows in an overlapped fashion.

3.7.4   Tile Horizontal command (Window menu)

Tile Horizontal command (Window menu)

Use this command to arrange multiple open windows in a non-overlapping fashion, with the preference being that the graphs be stacked one above the other in a horizontal fashion.

3.7.5   Tile Vertical command (Window Menu)

Tile Vertical command (Window menu)

Use this command to arrange multiple open windows in a non-overlapping fashion, with the preference being that the graphs be stacked one beside the other in a vertical fashion.

3.7.6   Arrange Icons command (Window menu)

Arrange Icons command (Window menu)

Use this command to arrange the icons for minimized windows at the bottom of the main window. If there is an open document window at the bottom of the main window, then some or all of the icons may not be visible because they will be underneath this document window.

3.7.7   1, 2, ... command (Window menu)

1, 2,..command (Window menu)

HanseVIEW displays a list of currently open document windows at the bottom of the Window menu. A check mark appears in front of the document name of the active window. Choose a document from this list to make its window active.

3.8 Help menu

3.8.1 Help menu commands

Help menu commands

The Help menu offers the following commands that provide you assistance with this application:

Help   the help file to the overview page
Contents and Index   you an index to topics for which you can get help
What's This?   this to get context-sensitive help information.
About HanseVIEW...   application information.

3.8.2 Help command (Help menu)

Help command (Help menu)

Use this command to display the opening screen of Help. From the opening screen, you can jump to step-by-step instructions for using HanseVIEW and various types of reference information.

Once you open Help, you can click the "Contents" button whenever you want to return to the opening screen.

Shortcut

Toolbar:
Keys: F1

3.8.3 Contents and Index command (Help menu)

Contents and Index command (Help menu)

Use this command to open the help file's table of contents, index, and search functions. You can browse through or search the help file for information on a particular subject.

3.8.4 Context Help

What's This? command (Help menu)

Use the Context Help command to obtain help on some portion of HanseVIEW. When you choose the Toolbar's Context Help button, the mouse pointer will change to an arrow and question mark. Then click somewhere in the HanseVIEW window, such as another Toolbar button or menu item. The Help topic for the item you clicked will be shown.

Shortcut

Toolbar:
Keys: Shift+F1

3.8.5 About command (Help menu)

About command (Help menu)

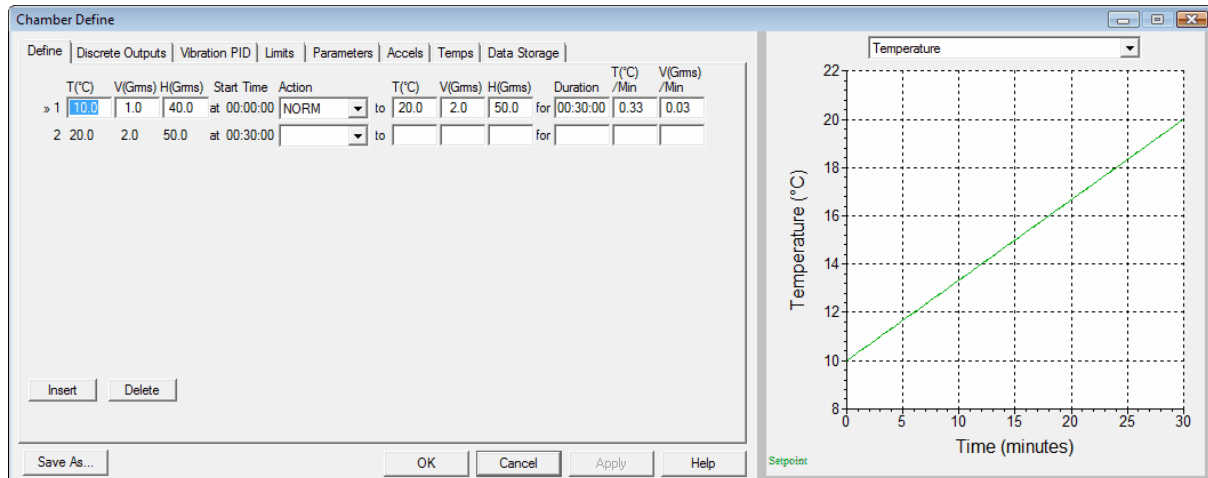Use this command to display the copyright notice and version number of your copy of HanseVIEW.

Part IV

4 Test Settings

4.1 Chamber Define Dialog Box

Chamber Define dialog box

This dialog box is accessed by selecting the Test..Edit Test menu command.

The Test is defined as a sequence of steps with a duration and an ending setpoint for temperature, vibration, and humidity

The first step has the initial setpoint values assignment in the left entries..

Each additional step linearly increments from the ending setpoint of the previous step to the entered setpoint entered in the right entries.

To have the program automatically compute the Duration Enter the ending Temperature and Vibration. If the values are different from the starting temperature and vibration the far right columns will be enabled (white). Enter a rate into the box and the system will recalculate the duration based on the entered rate.

Actions:
NORM   Step will linearly ramp from initial values in left columns to final values in right
               columns over time period specified in Duration
SHORT   Steps will advance the time if the process variable is outside the Soak Setpoint
               Window. Use SHORT steps to accelerate temperature changes
G.SOAK   .SOAK holds the current setpoint while the process variable is outside the Setpoint
               Window. Use G.SOAK to guaranty temperature soak periods.
WAIT A6   A6 is a special step which will hold the test at current setpoint while the circuit A6 to
               DGND is OPEN. This functionality requires a IOTech DaqBoard2000 and a DBK203 (or
               similar) breakout box.
LOOP   is a special step which repeats previous steps. Loops are specified as loop back
               step (from) and number of times to repeat the steps.

Insert button inserts a step below the step indicated with a double arrow right of the index number
Delete button deletes the step indicated with a double arrow right of the index number

Graph
The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the

text at top of graph to change displayed graph

Define	a sequence of steps.
Discrete Outputs	discrete outputs turned on for each sequence step.
Vibration PID	PID parameters for each sequence stop
Parameters	control loop parameters.
Limits	maximum and minimum vibration and temperature limits
Accels	and Label spectrum channels.
Temps	and Label temperature channels.
Data Store	automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...	the current settings under a new test name.
OK	the changes to this test, and close the dialog
Cancel	the dialog box and abandon all changes
Apply	the changes to the currently running test (does not save changes to the hard disk).
Help	help information about these parameters.

4.2   Chamber Define Outputs

Chamber Define Discrete Outputs tab
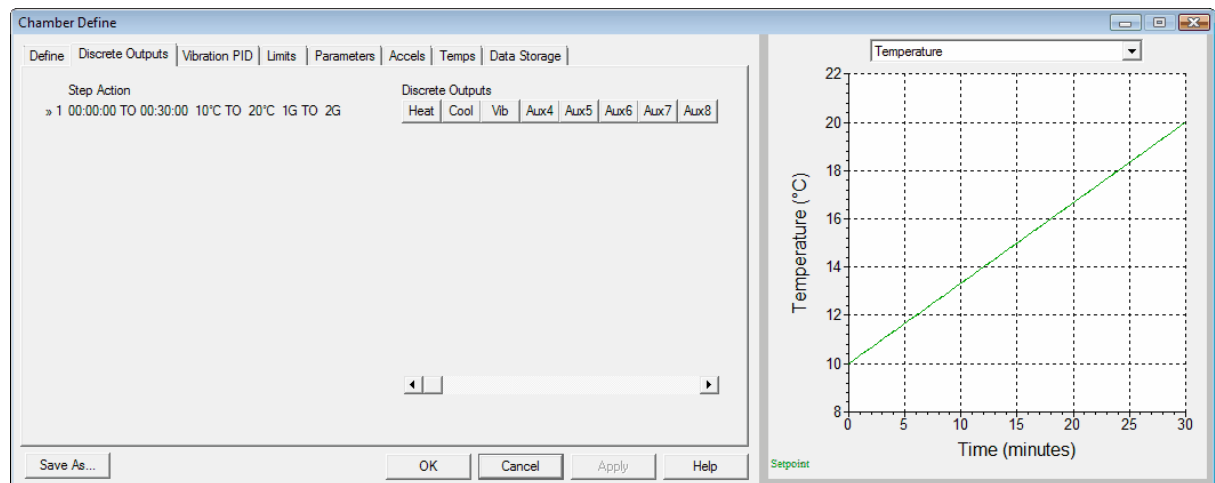
Step Action displaces the sequence of steps previously defined.

Click on pushbutton to toggle the output state on or off for the respective step.

the pushbutton is pressed the output will turn on at the start of the step and remain on the entire step

the pushbutton is off the output will turn off at the start of the step and remain off the entire step

If the pushbutton is pressed the output will turn on at the start of the step and remain on the entire step

If the

The scrollbar on the bottom is displayed if your controller supports more than 8 discrete outputs. Use the bottom scrollbar to display the additional supported outputs.

Graph

The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the text at top of graph to change displayed graph
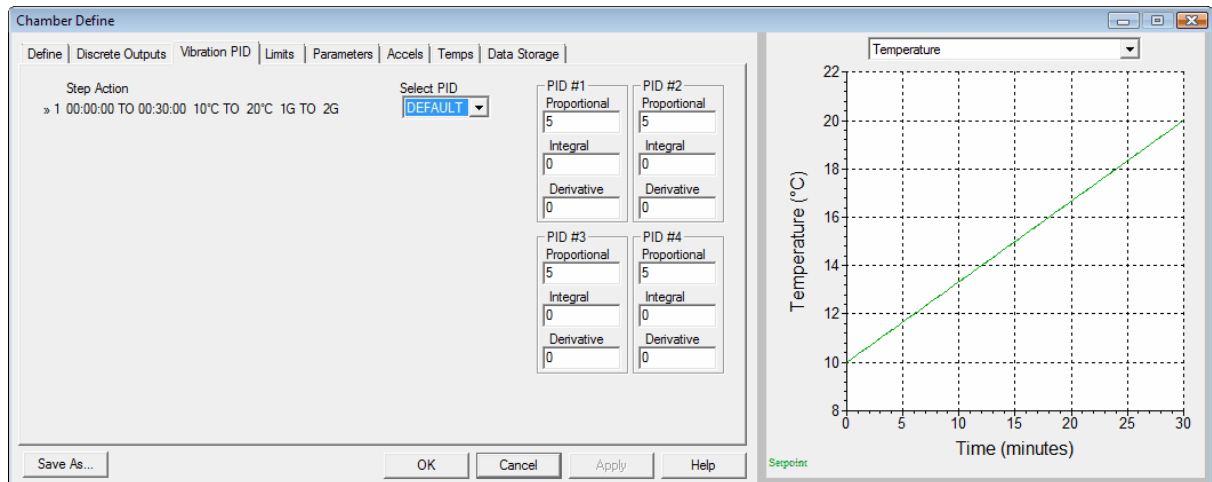
Define	a sequence of steps.
Discrete Outputs	discrete outputs turned on for each sequence step.
Vibration PID	PID parameters for each sequence stop
Parameters	control loop parameters.
Limits	maximum and minimum vibration and temperature limits
Accels	and Label spectrum channels.
Temps	and Label temperature channels.
Data Store	automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...	the current settings under a new test name.
OK	the changes to this test, and close the dialog
Cancel	the dialog box and abandon all changes
Apply	the changes to the currently running test (does not save changes to the hard disk).
Help	help information about these parameters.

4.3   Chamber Define Vibration PID

Chamber Define Vibration PID tab

Step Action displays the sequence of steps previously defined.

Additional PID setups can be entered for PID#1 - PID#5.
These additional PID parameters can be loaded into the controller at the beginning of any sequency step. The new PID parameters remain active until new parameters are selected

Graph

The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the text at top of graph to change displayed graph

Define	a sequence of steps.
Discrete Outputs	discrete outputs turned on for each sequence step.
Vibration PID	PID parameters for each sequence stop
Parameters	control loop parameters.
Limits	maximum and minimum vibration and temperature limits
Accels	and Label spectrum channels.
Temps	and Label temperature channels.
Data Store	automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...	the current settings under a new test name.
OK	the changes to this test, and close the dialog
Cancel	the dialog box and abandon all changes
Apply	the changes to the currently running test (does not save changes to the hard disk).
Help	help information about these parameters.

4.4   Chamber Define Limits

Chamber Define Limits tab
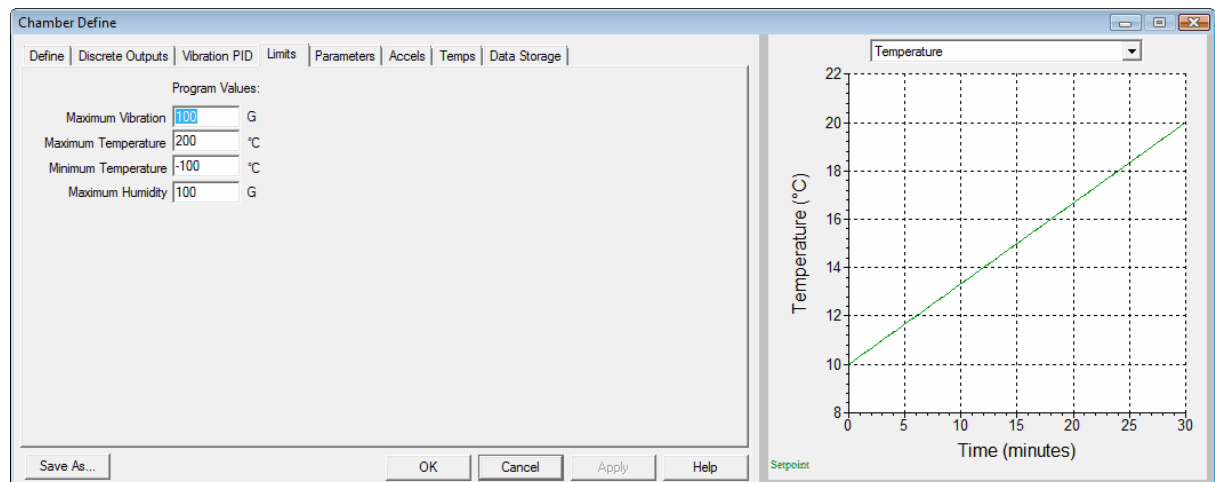
This dialog box is accessed by clicking the "Limits" tab in the Chamber Define dialog box.

Program Values

Maximum Vibration	allowed vibration on the product. Vibration exceeding this level on the controller or spectrum hardware will stop the test
Maximum Temperature	allowed temperature on the product. Temperature exceeding this level on the controller will stop the test.
Maximum Vibration Frequency	allowed temperature on the product. Temperature below this level ont the controller will stop the test..

Graph
The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the text at top of graph to change displayed graph

Define	a sequence of steps.
Discrete Outputs	discrete outputs turned on for each sequence step.

Vibration PID	PID parameters for each sequence stop
Parameters	control loop parameters.
Limits	maximum and minimum vibration and temperature limits
Accels	and Label spectrum channels.
Temps	and Label temperature channels.
Data Store	automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...	the current settings under a new test name.
OK	the changes to this test, and close the dialog
Cancel	the dialog box and abandon all changes
Apply	the changes to the currently running test (does not save changes to the hard disk).
Help	help information about these parameters.

4.5   Chamber Define Parameters tab

Chamber Define Parameters tab
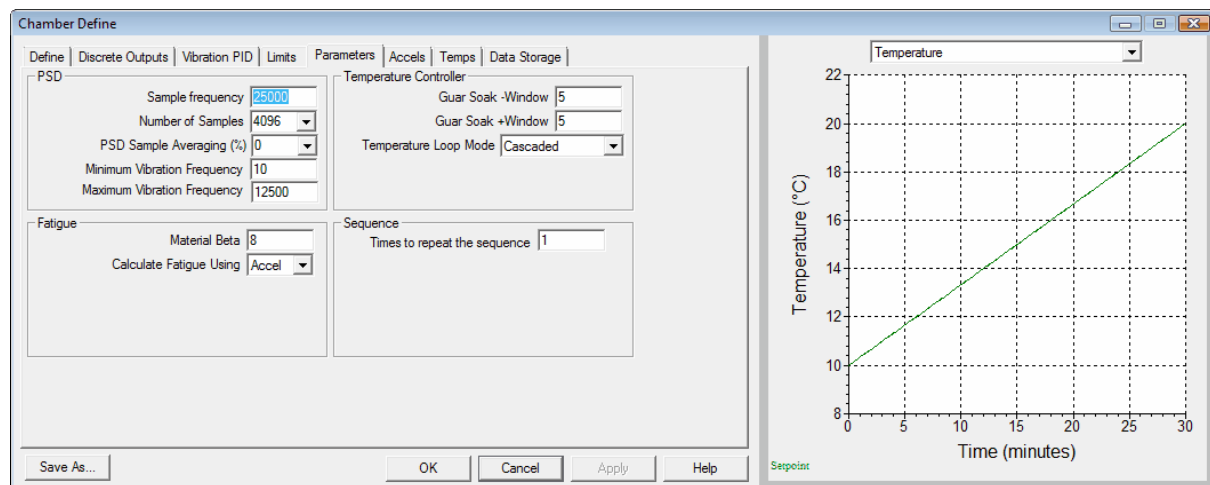
This dialog box is accessed by clicking the "Parameters" tab in the Chamber Define dialog box.

PSD Paramaters

Sample Frequency	of scans of each samples channel per second
Number of Samples	Number of samples collected for each channel
PSD Sample Averaging	Number is percentage weighting of previous readings. 99% is maximum averaging, 0% for Averaging OFF
Minimum Vibration Frequency	Frequency used to calculate rms value of current vibration. All frequencies below the minimum vibration frequency will be filtered out.
Maximum Vibration Frequency	Frequency used to calculate rms value of current vibration. All frequencies above the maximum vibration frequency will be filtered out.

Fatigue Parameters

| Material Beta | Beta used with Miner's Rule Fatigue calculation |
| Calculate Fatigue Using | fatigue using velocity or acceleration. |

Temperature Controller Parameters

| Guar Soak -Window | process value deviation above SP in soak step |

Guar Soar +Window   process value deviation below SP in soak step
Temperature Loop Mode   (use product as outer loop /cascaded air setpoint)
                                           Single Loop (use Air setpoint alone)
Inner Loop Maximum SP Deviation   maximum air temperature setpoint deviation from current
                                           product setpoint. With With Watlow F4 use the Max Boost for the
                                           Heat and Cool Loops from Configuration .. Controller Parameters.
                                           With JC systems use FASTRAC feature built into controller

Sequence Parameters
Repeats   of times to repeat the entire sequence

Graph
The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the
text at top of graph to change displayed graph.

Define   a sequence of steps.
Discrete Outputs   discrete outputs turned on for each sequence step.
Vibration PID   PID parameters for each sequence stop
Parameters   control loop parameters.
Limits   maximum and minimum vibration and temperature limits
Accels   and Label spectrum channels.
Temps   and Label temperature channels.
Data Store   automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...   the current settings under a new test name.
OK   the changes to this test, and close the dialog
Cancel   the dialog box and abandon all changes
Apply   the changes to the currently running test (does not save changes
                   to the hard disk).
Help   help information about these parameters.
.
Graph
The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the
text at top of graph to change displayed graph

Define   a sequence of steps.
Discrete Outputs   discrete outputs turned on for each sequence step.
Vibration PID   PID parameters for each sequence stop
Parameters   control loop parameters.
Limits   maximum and minimum vibration and temperature limits
Accels   and Label spectrum channels.
Temps   and Label temperature channels.
Data Store   automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...   the current settings under a new test name.
OK   the changes to this test, and close the dialog
Cancel   the dialog box and abandon all changes
Apply   the changes to the currently running test (does not save changes
                   to the hard disk).
Help   help information about these parameters.

4.6   Chamber Define Accelerometers tab

Chamber Define Accelerometers tab
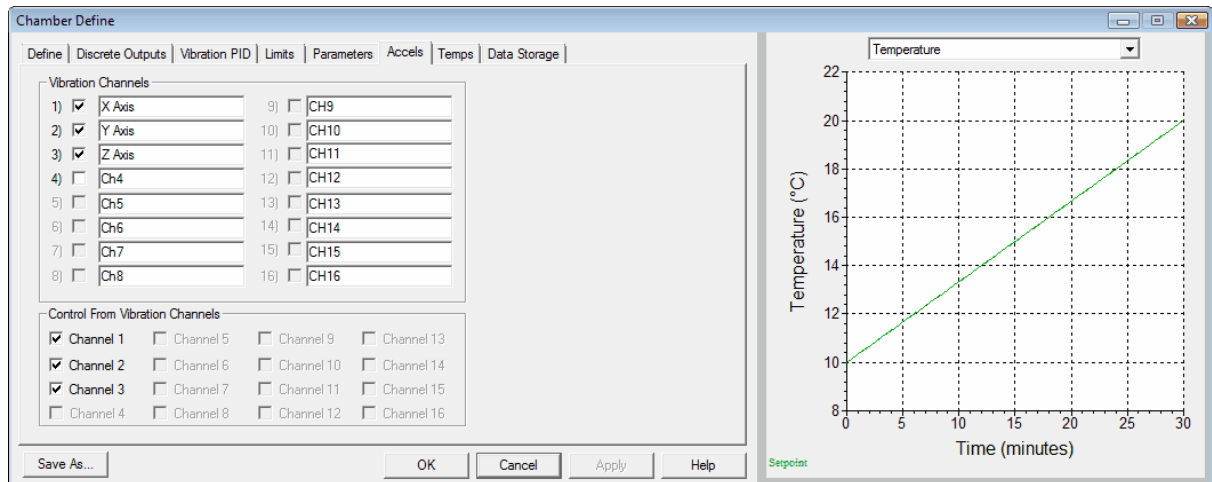
This dialog box is accessed by clicking the "Accels" tab in the Chamber Define dialog box.

Vibration Channels
Channels with a check mark have full spectrum data collection
Channels without a check mark are ignored.
Channels can be labeled individually for this specific test.

Control From Vibration Channels
This section only applies to control systems without independent system control accelerometers. *All systems with independent control accelerometers always control from the system control accelerometers, regardless of what is selected bere.*
Any or all active vibration channels can be retransmitted on the analog output channel as a DC voltage.
If multiple channels are checked they are averaged, then retransmitted.
The output format is defined by channel 1 accelerometer sensitivity.
Example:
If channel 1 input is 10mV/G the output will be 10mV/(Grms). (0VDC = 0Grms, 5VDC=500Grms)
If channel 1 input is 100mV/G the output will be 100mV/(Grms). (0VDC=0Grms, 5VDC=50Grms)

Graph
The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the text at top of graph to change displayed graph.

Define	a sequence of steps.
Discrete Outputs	discrete outputs turned on for each sequence step.
Vibration PID	PID parameters for each sequence stop
Parameters	control loop parameters.
Limits	maximum and minimum vibration and temperature limits
Accels	and Label spectrum channels.
Temps	and Label temperature channels.
Data Store	automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...	the current settings under a new test name.
OK	the changes to this test, and close the dialog
Cancel	the dialog box and abandon all changes
Apply	the changes to the currently running test (does not save changes to the hard disk).
Help	help information about these parameters.

Graph
The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the text at top of graph to change displayed graph

Define	a sequence of steps.
Discrete Outputs	discrete outputs turned on for each sequence step.
Vibration PID	PID parameters for each sequence stop
Parameters	control loop parameters.
Limits	maximum and minimum vibration and temperature limits
Accels	and Label spectrum channels.
Temps	and Label temperature channels.
Data Store	automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...	the current settings under a new test name.
OK	the changes to this test, and close the dialog
Cancel	the dialog box and abandon all changes
Apply	the changes to the currently running test (does not save changes to the hard disk).
Help	help information about these parameters.

4.7   Chamber Define Temperature tab

Chamber Define Temperature tab
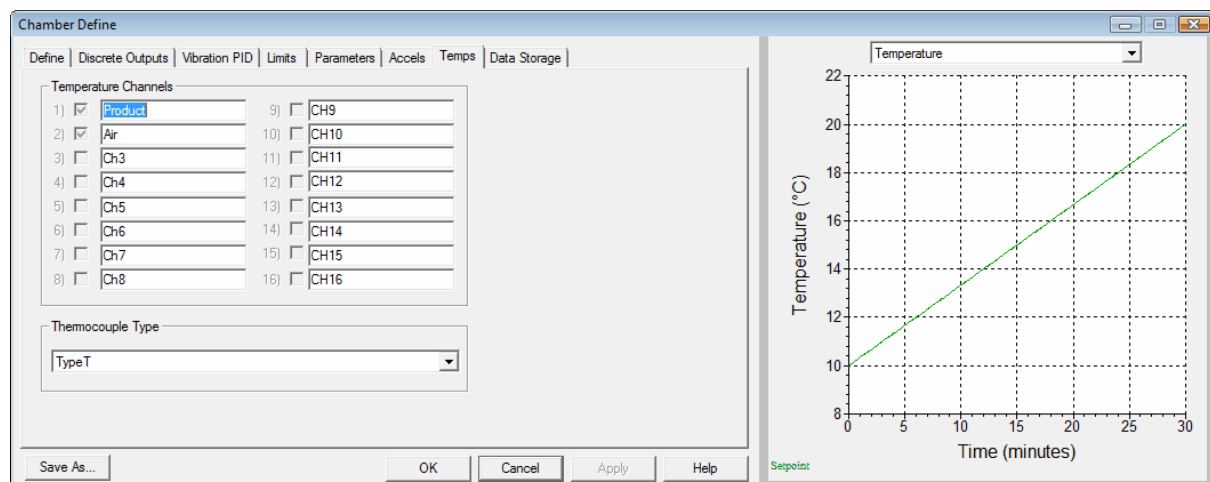
This dialog box is accessed by clicking the "Temps" tab in the Chamber Define dialog box.

Temperature Channels
Channels with a check mark have full spectrum data collection

Channels without a check mark are ignored.
Channels can be labeled individually for this specific test.

Thermocouple Type
Thermocouple type sets thermocouple type for optional channels 3-16. Channels 1 and 2 are internal to your controller and must be set there..
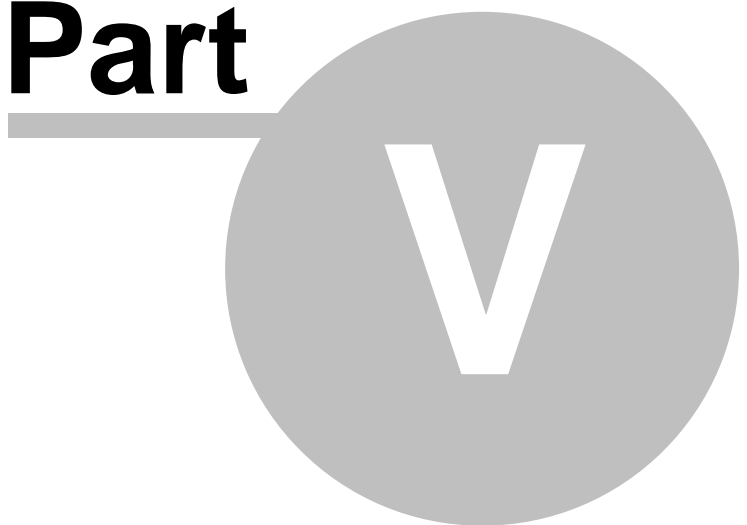
Graph
The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the text at top of graph to change displayed graph

Define	a sequence of steps.
Discrete Outputs	discrete outputs turned on for each sequence step.
Vibration PID	PID parameters for each sequence stop
Parameters	control loop parameters.
Limits	maximum and minimum vibration and temperature limits
Accels	and Label spectrum channels.
Temps	and Label temperature channels.
Data Store	automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...	the current settings under a new test name.
OK	the changes to this test, and close the dialog
Cancel	the dialog box and abandon all changes
Apply	the changes to the currently running test (does not save changes to the hard disk).
Help	help information about these parameters.

4.8   Chamber Define Data tab

Chamber Define Data Storage tab
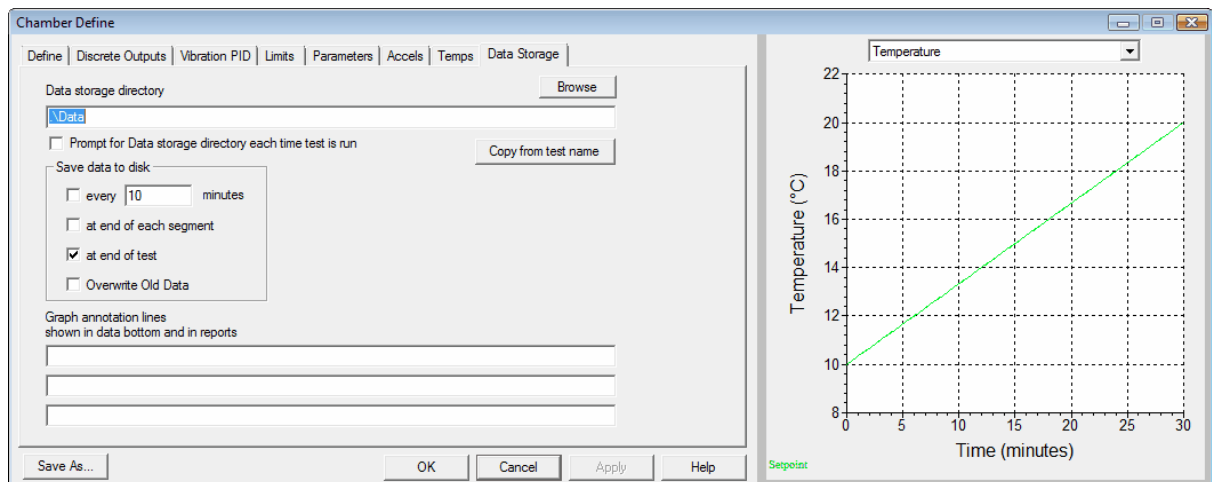
This dialog box is accessed by clicking the "Data" tab on the Chamber Define dialog box.

Use this dialog box to enable automatic data saving to disk. You can save the data at the end of a

level, at the end of a test, at the end of a sweep, or at the end of a time period. All data is saved as a time stamped file, and can be viewed at a later time by selecting the Window..New window..Stored data graph display menu command.

You may also select the directory into which to store the data. Click the "Copy from test name" button to automatically create an output directory based on the name of the current test.

The Graph annotation lines are displayed on the Data Bottom portion of a graph (if Data Bottom is selected for the graph) and also will appear in reports generated from this test data.

Graph
The graph displays Temperature, Humidity, or Vibration setpoints. Click on the arrow to the right of the text at top of graph to change displayed graph

Define	a sequence of steps.
Discrete Outputs	discrete outputs turned on for each sequence step.
Vibration PID	PID parameters for each sequence stop
Parameters	control loop parameters.
Limits	maximum and minimum vibration and temperature limits
Accels	and Label spectrum channels.
Temps	and Label temperature channels.
Data Store	automatic data storage parameters.

The buttons at the bottom of the dialog box perform the following operations:

Save As...	the current settings under a new test name.
OK	the changes to this test, and close the dialog
Cancel	the dialog box and abandon all changes
Apply	the changes to the currently running test (does not save changes to the hard disk).
Help	help information about these parameters.

Part

V

5 Control Centers

5.1 Chamber Control Center

Chamber Control Center

The control centers are docking toolbars, and may be:
- attached to either the left or right side of the HanseVIEW window
- detached and moved independently
- turned on/off by selecting the View..Control buttons menu command

Stop: This button stops the test. You should stop the test before opening a new test. If you stop a test for some reason and desire to continue where you left off, click the "Run" button and click the "Yes" button at the dialog box that asks if you want to continue or start from the beginning. Clicking this button is the equivalent of flipping the stop switch on the front of the I/O box.

Run: This button starts the test. Click this button when you are ready to start your test. This button will show dark green when you are not running, yellow when you are starting, light blue if starting with a memorized drive and green when you are running. This button is the equivalent of flipping the start switch on the front of the HanseVIEW I/O unit.

Reset Data: This button clears the historical high/low/last pass data from the graphs.

Edit Setpoints: This button allows manual override of the set points for the loop controller and also manual override of the discrete outputs. This command displays the Edit Value dialog box.

Channels: These boxes are the input channels. They show you what the system is reading for the shaker acceleration, velocity, or displacement (depending on which mode it is in. See below.).

Elapsed Time: This box shows the current date and time.

Test Name: This box shows the name of the test file that you are running.

Stop Code/Info: This box shows why the test shut down. Click this button for more information on the current status of the test. See also: Stop Codes

Diagnostic counters can be displayed with shortcut <ALT><D>

5.2   Repetitive Shock Control Center

Repetitive Shock Control Center

The toolbar shows rms Vibration information and Fatigue.

The rms Vibration displayed is the filtered input. Edit the maximum and minimum frequencies in Test..
Edit Test, parameters tab.
The Fatigue is independent of any filtering setup in test parameters on the parameters tab

X Axis G RMS	Y Axis G RMS	Z Axis G RMS	Ch4 G RMS
0.00	0.00	0.00	-
Fatigue	Fatigue	Fatigue	Fatigue
0.000	0.000	0.000	-

The control centers are docking toolbars, and may be:
- attached to either the left or right side of the HanseVIEW window
- detached and moved independently
- turned on/off by selecting the View..Control buttons buttons menu command

5.3   Temperatures 3-16

Additional 14 Channels of Temperature Information

Ch3 °C	Ch4 °C	Ch5 °C	Ch6 °C
-	-	-	-
Ch7 °C	Ch8 °C	CH9 °C	CH10 °C
-	-	-	-
CH11 °C	CH12 °C	CH13 °C	CH14 °C
-	-	-	-
CH15 °C	CH16 °C		
-	-		

The control centers are docking toolbars, and may be:
- attached to either the left or right side of the HanseVIEW window
- detached and moved independently
- turned on/off by selecting the View..Control buttons menu command

Part VI

6 Typical Views

6.1 Chamber CRT View

Chamber CRT View
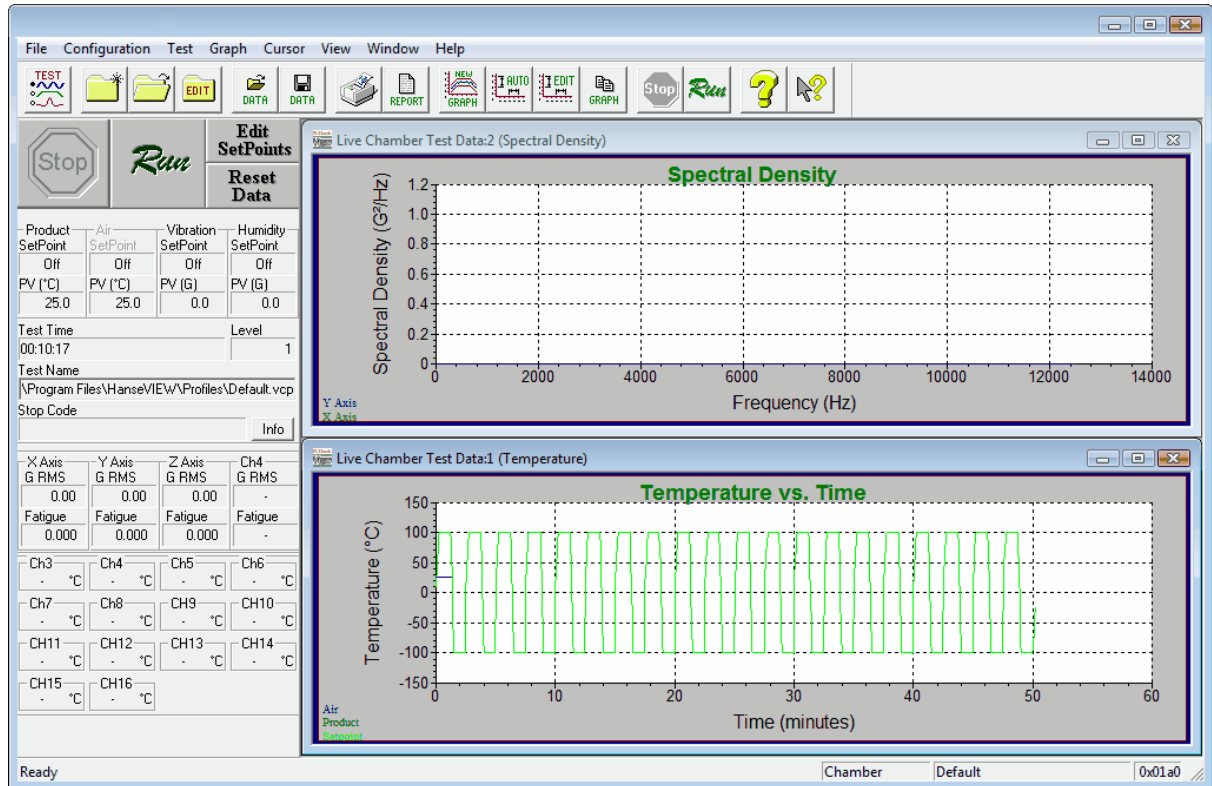
Part VII

7 Stop Codes

7.1 Stop Codes

Stop Codes

The following codes indicate the status of the controller, and occur during normal controller operation:

Running Test	Starting Schedule	Remote Start
Remote Stop	Front Panel Start	Front Panel Stop
Exceeded Vibration High Limit	Exceeded Temperature High Limit	Exceeded Humidity Hight Limit
End of Timed Test	Stop Button Pressed	Starting Test
Controller Alarm 1		
Test Parameters Changed	Emergency Stop	Invalid Remote Test

7.2 Running Test

Running Test (Stop Code)

This code indicates that the test is now running.

7.3 Starting Schedule

Starting Schedule (Stop Code)

This code indicates that this test is one of several tests listed in a test schedule, and was started using the Test Schedule dialog box.

7.4 Remote Start

Remote Start (Stop Code)

This code indicates that the test was started using the Remote Start option.

7.5 Remote Stop

Remote Stop (Stop Code)

This code indicates that the test was stopped using the Remote Stop option. When this code is displayed, the test is complete and the output is turned off.

7.6 Front Panel Start

Front Panel Start (Stop Code)

This code indicates that the test was started using the "Start" switch on the front panel of the HanseVIEW I/O unit.

7.7 Front Panel Stop

Front Panel Stop (Stop Code)

This code indicates that the test was stopped using the "Stop" switch on the front panel of the

VibrationVIEW I/O unit. When this code is displayed, the test is complete and the output is turned off.

7.8   End of Timed Test

End of Timed Test (Stop Code)

This code indicates that the test was run for the scheduled sequence. When this code is displayed, the test is complete and the output is turned off.

7.9   Test Parameters Changed

Test Parameters Changed (Stop Code)

This code indicates that the test parameters were changed, using either the Test..Edit Test or the Test..New Test menu commands, or their respective toolbar buttons. As a result of the test parameter changes, the test was halted.

7.10   Stop Button Pressed

Stop Button Pressed (Stop Code)

This code indicates that the test was halted through operator control, by selecting either the Test..Stop Test menu command, clicking the "Stop" button on the toolbar, or clicking the "Stop" button in the Chamber Control Center.

7.11   Emergency Stop

Emergency Stop (Stop Code)

This code indicates that the emergency stop input was pressed, causing the controller to shut down. The emergency stop input is an optional accessory that connects to the remote input terminal block on the rear of the HanseVIEW I/O unit. This option is enabled and disabled using the "Emergency stop input" selection in the HanseVIEW Configuration Parameters dialog box.

7.12   Invalid Remote Test

Invalid Remote Test (Stop Code)

This stop code indicates that the "Remote Start/Stop" and "Remote Selection" options are both enabled, but that the test number selected using the remote test selection input does not have a valid test name configured for the current input settings. Select the Configuration..Remote Inputs menu command to verify that the test names configured there are valid.

If you do not want the program to automatically load a test when the remote input signal goes high, set Remote Selection to "Disabled" in the Remote Inputs configuration dialog box. That is, if you want the remote input signal to simply start/stop the current test, enable "Remote Start/Stop" and disable "Remote Selection".

7.13   Starting Test

Starting Test (Stop Code)

The Test is Starting.

7.14 Chamber Exceeded High Limit

Exceeded High Vibration Limit (Stop Code)

This test was stopped because the indicated channel exceeded the high limit set in the test configuration.

7.15 Exceeded Temperature High Limit

Exceeded High Temperature Limit (Stop Code)

This test was stopped because the indicated channel exceeded the high limit set in the test configuration.

7.16 Exceeded Humidity High Limit

Exceeded Humidity Temperature Limit (Stop Code)

This test was stopped because the indicated channel exceeded the high limit set in the test configuration.

7.17 Controller Alarm

Controller Error (Stop Code)

This code indicates a error condition has been detected by the process controller. Check the front panel of the process controller (Watlow, JC Systems, Sun, etc) for an error indication.

7.18 Remote Start Error

Remote Start Error Message dialog box

The system failed to start *VibrationVIEW* vibration test.

Part VIII
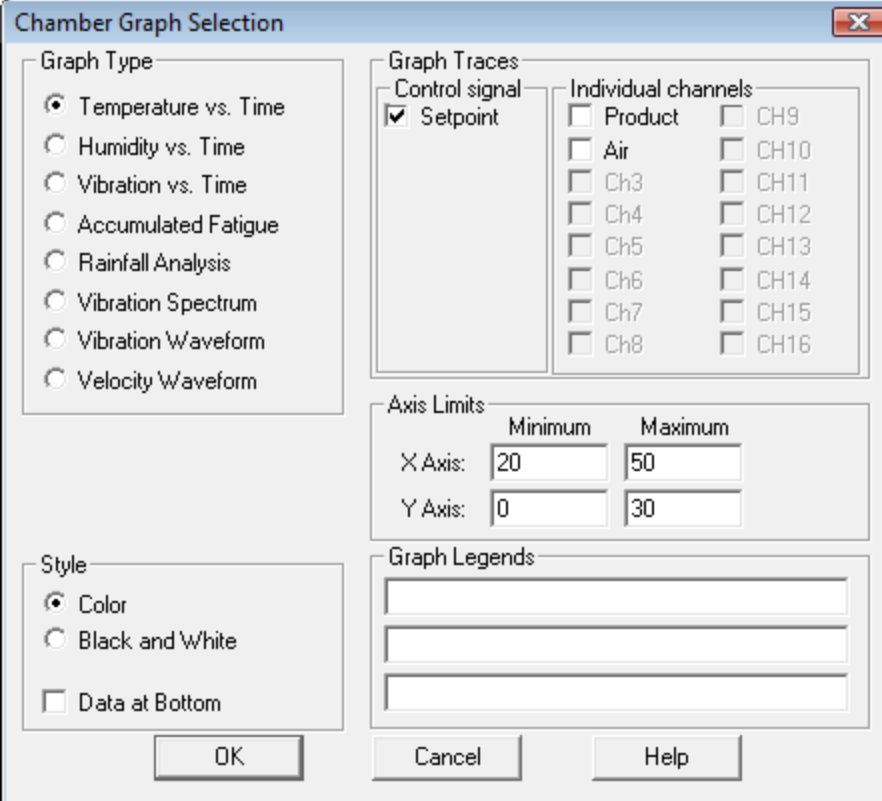
8 Graph Settings

8.1 Graph settings

Chamber/ Repetitive Shock Graph Settings dialog box

This dialog box is used when creating a new graph using the File..New Graph or Window..New Window menu commands, when changing the settings of the selected graph using the Graph..Edit Graph Settings menu command, or when setting the default graph settings by clicking the "Graph" button in the Chamber Define dialog box.

Part

IX

9 Dialog Boxes

9.1 Schedule Loop

Schedule Loop dialog box

This dialog box is accessed by clicking the "Add Loop" button in the HanseVIEW Test Schedule dialog box.
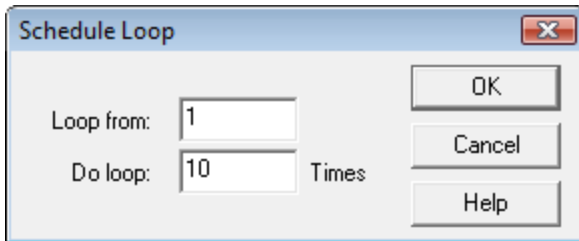
Enter the test number of the first test in the sequence in the "Loop from" entry, and then the total number of times you want the sequence of tests performed in the "Do loop" entry. Then click the "OK" button to enter the loop parameters into the test schedule

9.2 Cursor Display dialog box

Cursor Display dialog box

This dialog box is accessed by selecting the Graph..Cursor Display menu command.
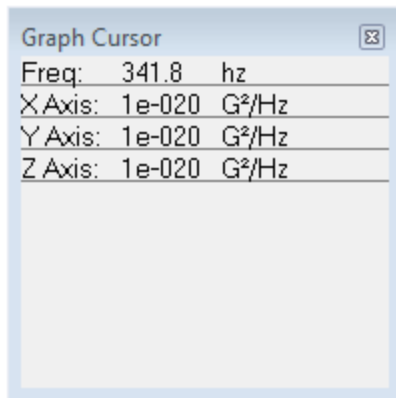
This dialog box will display the values of the graph data at the cursor position in the currently selected graph. The parameters displayed will be specific to the selected graph.

9.3 Manually Edit Setpoints

Edit Value dialog box

Use this command to force control loop set points or manually turn discrete outputs on or off. This box is displayed with the **Edit Setpoints** command button on the Chamber Control Center.
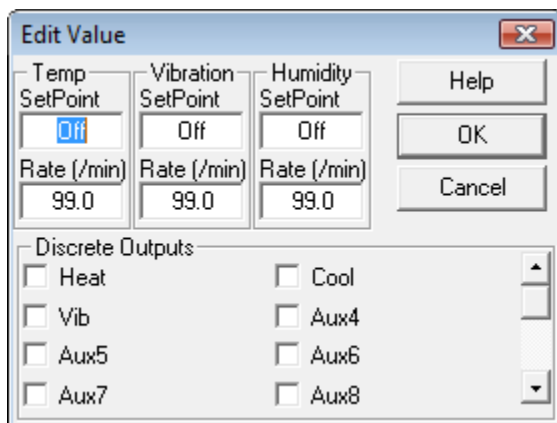
The SetPoints highlighted yellow will be set when the OK button is pressed. The setpoint will transition from current value to the newly entered value at the rate specified. Changing the Rate without changing the SetPoint has no effect.

Forcing outputs during a program run overrides all following set point changes.
Forcing setpoints during a program run overrides all following set point changes.

9.4 Message dialog box

Message dialog box

This dialog box is used to provide status information for an operation that may take more than a couple of seconds.

9.5 Wait message

Wait message

This dialog box indicates that a file transfer is in progress, and provides feedback to the user as to how much remains before the transfer is complete. Please wait until this dialog disappears before continuing.

9.6 Notice Message dialog box

Notice Message dialog box

This dialog box is used to provide a variety of notice messages. The dialog box will stay open until the "OK" button is pressed, but will not interrupt normal program operation.

9.7 Password Entry dialog box

Password Entry dialog box

This dialog box appears whenever a password-protected operation is performed. Type in the password, and click the "OK" button to continue.
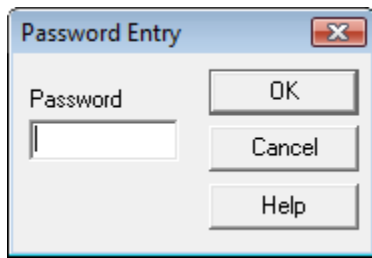
A sheet of paper with the password instructions was attached to the manual you received with your system. Contact Vibration Research Corporation (616-669-3028) if you have forgotten the password.

Note: Use the following procedure to disable the password protection feature of the program:

1. Open the file 'C:\Program Files\HanseVIEW\chamber.ini' using Notepad
2. Find the section labeled [Password]
3. This section should have two lines:
   Calibrate=ThePasswordHere
   Program=ThePasswordHere
4. Enter the passwords in either or both lines, in place of ThePasswordHere, and save the shaker.ini file.

The Program password is used to protect the test profiles from unauthorized or inadvertent changes. The Calibrate password is used to protect the system calibration dialog box from unauthorized changes.

9.8 Start Time Offset

Chamber/ Repetitive Shock Start Time Offset dialog box

This dialog box is used when to select a starting time for the test.
If a time other than "0:00:00" is entered the test will be advanced to the entered time, then run.
Time may be entered as minutes using shortcut 56m for 56 minutes.
Time may be entered as hours using the shortcut 17h for 17 hours.

Use "Reset and Run" pushbutton to start test from the beginning.
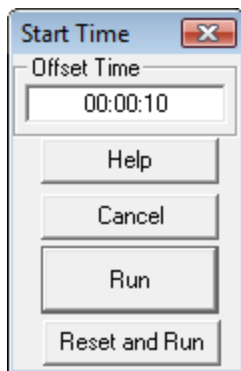
9.9 File Dialog

File Open/Save dialog box

Use this dialog to quickly browse for directories.
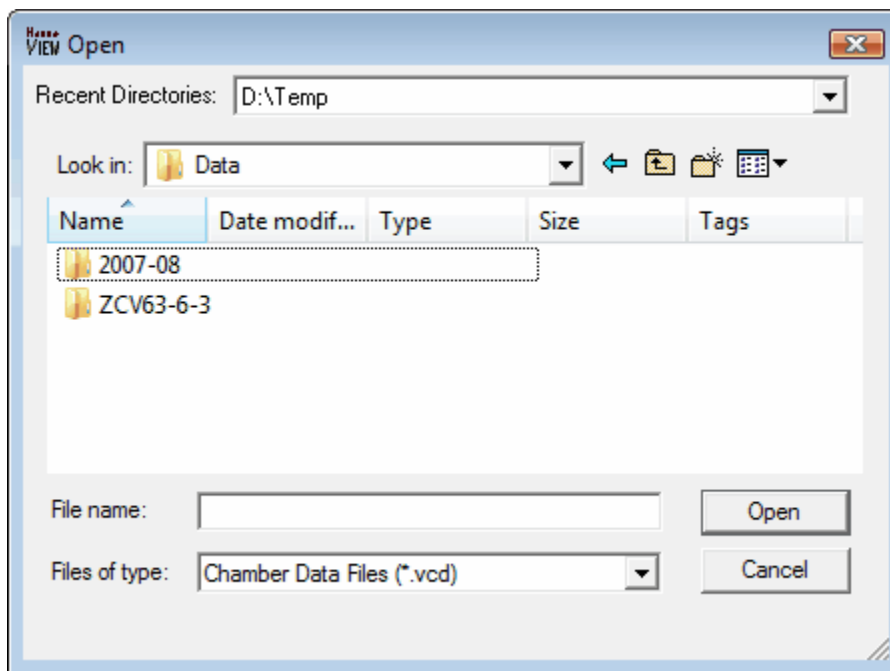
The **Recent Directories** drop list displays a list of directories recently used to save this type of file. Use this drop list to quickly navigate back to these locations. It is automatically updated whenever a file is saved or loaded. If you need to navigate to a location not listed on the **Recent Directories** use the **Save in:** entry to navigate through the windows directory tree. Select a file in the file list, or directly enter a file name into the **File name** box. The **Save as type** may offer alternate file formats for saving and loading.

9.10   Windows Elements

9.10.1 System Menu

9.10.1.1 Restore command (System menu)

Restore command (System menu)

Use this command to return the active window to its size and position before you chose the Maximize or Minimize command.

9.10.1.2 Move command (System menu)

Move command (System menu)

Use this command to display a four-headed arrow that allows you to move the active window or dialog box with the arrow keys.

Note: This command is unavailable if you maximize the window.

Shortcut
Keys: CTRL+F7

9.10.1.3 Size command (System menu)

Size command (System menu)

Use this command to display a four-headed arrow that allows you to resize the active window with the arrow keys.

After the pointer changes to the four-headed arrow:
1.   Press one of the DIRECTION keys (left, right, up, or down arrow key) to move the pointer to the border you want to move.
2.   Press a DIRECTION key to move the border.
3.   Press ENTER when the window is the size you want.

Note: This command is unavailable if you maximize the window.

Shortcut
    Mouse: Drag the size bars at the corners or edges of the window.

9.10.1.4 System Minimize Command (System menu)

Minimize command (System Control menu)

Use this command to reduce the HanseVIEW window to an icon.

Shortcut
    Mouse: Click the minimize icon [icon] on the title bar.
    Keys: ALT+F9

9.10.1.5 Maximize command (System menu)

Maximize command (System menu)

Use this command to enlarge the active window to fill the available screen space.

Shortcut
    Mouse: Click the maximize icon [icon] on the title bar; or double-click the title bar.
    Keys: CTRL+F10 enlarges a document window.

9.10.1.6 Close command (System menu)

Close command (System menu)

Use this command to close the active window or dialog box.

Double-clicking a Control-menu box is the same as choosing the Close command.

Note: If you have multiple windows open for a single document, the Close command on the document Control menu closes only one window at a time. You can close all windows at once with the Close command on the File menu.

Shortcuts
    Keys: CTRL+F4 closes a document window
                        ALT+F4 closes the HanseVIEW window or dialog box

9.10.2 Title Bar

Title Bar

- [Live Chamber Test Data (Spectral Density)]

The title bar is located along the top of a window. It contains the name of the application and current document.

To move the window, drag the title bar. Note: You can also move dialog boxes by dragging their title bars.

A title bar may contain the following elements:
- Application Control-menu
- Document Control-menu
- Maximize
- Minimize
- Name of the application
- Name of the document
- Restore

Index

- A -

about   70
accelerometer   25, 51
accelerometer calibration   25
accelerometer sensitivity   51
active   69
add   63
add annotation   63
advance levels   56
annotation   63, 64
arrange   69
arrange icon   69
assistance   25, 33, 70
autoscale   60
average   76
averaging   76

- B -

bar   65, 66, 101
bitmap file   40
browse   70

- C -

calibrate   25, 49
calibrating   25, 49
calibration   25, 49
cascade   69
Chamber Define Data   80
Chamber Define Vibration PID   74
change size   100
channel   60
channels   60, 78
close   100
color   59
colors   59
command   8
commands   8
common   88
common screen   88
computer requirements   10

configuration   45
configuration menu   45
contents   70
control buttons   66
control center   8, 84
control centers   8
control channels   78
convert   33, 41
copy   38
copy graph   38
create   42
create report   42
CRT view   88
cursor   61, 96
cursor data   61, 96
cursor display   61, 96

- D -

data   39, 40, 41
define   58

- E -

edit   58, 60
edit graph   60
edit test   58
enter   26
enter tests   26
escape   100
exit   100
explore   44
explorer   44

- F -

file   38
file menu   38
files: managing   38
filter   78
full   60
full autoscale   60

- G -

gain   76
graph   38

- X -

- Y -