

# ***Dash 8Xe / Dash 8X Data Acquisition Recorder***



## ***QUICK START GUIDE***

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## 1. INTRODUCTION

Thank you for choosing an Astro-Med data acquisition recorder. This Quick Start Guide was prepared to help you become acquainted with your recorder as quickly as possible. We even include sample exercises so you can become familiar with the basic operation.

This Quick Start Guide supports two models: The Dash 8Xe and the Dash 8X. Throughout this guide, both models will be referred to as **Dash 8Xe / Dash 8X**.

The **Dash 8Xe / Dash 8X** is a powerful and versatile data acquisition recording system that provides the capability to display, record, and review waveform data. The system uses up to eight plug-in modules for signal input connections. Input modules are installed using the eight plug-in slots, which provide configuration flexibility for a variety of applications and future growth.

Data samples from up to eight signals can be acquired at rates up to 200,000 samples per second and streamed directly to a high-capacity hard drive. Additionally, the **Dash 8Xe / Dash 8X** has a scope card option that adds four channels with sample rates of up to five million samples per second.

The **Dash 8Xe / Dash 8X** utilizes a touch-screen as the main user interface. Many of the **Dash 8Xe / Dash 8X** control icon buttons are customizable, providing the capability to modify the display based on the needs of the user or application.

## 2. GETTING STARTED

**Voltage Verification:** The **Dash 8Xe / Dash 8X** has an auto-sensing power supply that operates from 100 – 250 VAC at 50 or 60 Hz. You do not have to set up any fuse block arrangement.

**Connect AC Power Cord:** Connect AC power cord to the side panel, then to an outlet.

**Turn On Dash 8Xe / Dash 8X:** When you turn on the **Dash 8Xe / Dash 8X**, the display will show various initialization screens and then load in the last setup it had before it was powered down.

**Signal Inputs:** The **Dash 8Xe / Dash 8X** can record up to eight channels of analog signals. Signal type is dependent upon the signal module used for each channel.

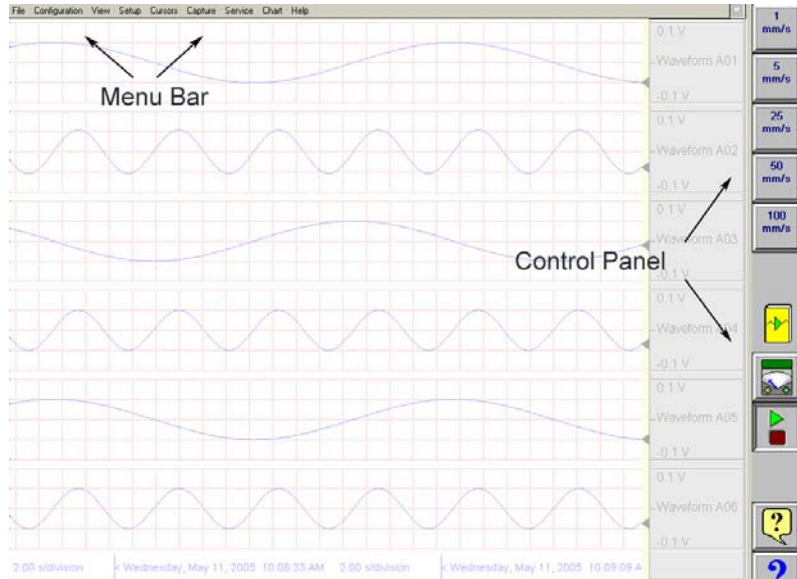
**Display:** The **Dash 8Xe / Dash 8X** has a large touchscreen display. The display is divided into two main areas, the Waveform Display Area (shows the waveform signals typically drawn onto a grid pattern) and the Control Panel (rows of control icon buttons for operation).

## 3. HARDWARE OVERVIEW

The following is a summary of the location of the physical components of the **Dash 8Xe / Dash 8X**.

<b>Front View:</b>	Touch Screen, Carry Handle
<b>Right Side View:</b>	Signal Modules (up to eight signal modules), Computer connections (parallel port, serial port, USB port, Ethernet port, Mouse port, Keyboard port, VGA port)
<b>Left Side View:</b>	Power indicator light, Power switch, Power inlet, Scope card (optional), Utility port, Recorder port (model SCR-8), Link ports, Event port, DC Input

## 4. MENUS & ICON BUTTONS



**Dash 8Xe / Dash 8X screen highlighting the Menu Bar and Control Panel**

### **MENU BAR**

The menu bar is a group of drop-down menus located across the top of the display. All **Dash 8Xe / Dash 8X** modes and features can be accessed from this menu. Options available from the menu bar will vary based on the mode of operation (Realtime, Scope, or Review) used.

If the date and time are visible instead of the menu bar, choose the **M** icon in the upper right hand corner, which toggles the display of date/time and menu bar.

File Configuration View Setup Cursors Capture Service Chart Help

#### **File**

The File menu is used to save and load your setup files.

#### **Configuration**

The Configuration menu is used to select the operation of the **Dash 8Xe / Dash 8X**.

#### **View**

The View menu is used to supplement the graph display of your signals.

#### **Setup**

The Setup menu is used to configure the **Dash 8Xe / Dash 8X**.

#### **Cursors**

The Cursors menu is used for time and amplitude measurements.

#### **Capture**

The Capture menu is used to setup, arm, manual trigger, and abort data captures.

#### **Service**

The Service menu is for less frequently used parameters such as calibration and security settings.

#### **Chart**

The Chart menu provides for operation of the optional SCR-8 thermal recorder.

#### **Help**

The Help menu provides for on-line assistance.

### **CONTROL PANEL**

The control panel is an array of icon-based buttons located on the right hand side of the display. The icon buttons allow a single touch to execute a function. The **Dash 8Xe / Dash 8X** ships with the control panel displaying icon buttons for speed control, analog set up, meter mode, and run/halt.

The control panel can be customized to add or remove buttons to suit your recording needs. Further, the control panel settings can be saved to a file for later recall making test preparation very easy.

### Commonly Used Icon Buttons

The following icon buttons are commonly used in *Dash 8Xe / Dash 8X* windows:



**OK** saves the information you entered in a window and then closes the window.



**Exit** cancels the action you were performing in a window and closes the window without saving any changes.



**Apply** saves the information you modified in a window without closing the window.



**Select All** selects/highlights all items in a list box.



**Clear Selection** removes the selections/highlights from all items in a list box.



**Copy** copies the selected items (or characteristics of selected items) to the clipboard.



**Paste** pastes the clipboard contents to the selected location.



**Save** saves current configurations to a file on your disk.



**Load** loads configurations from a file on your disk.

## 5. USING THE Dash 8Xe / Dash 8X

The **Dash 8Xe / Dash 8X** has three modes of operation, Realtime, Scope, and Review modes.

**Realtime Mode:** Realtime mode provides real-time waveform scrolling, monitoring, and data capture capabilities. Additionally, almost all system setup options are accessible from Realtime mode.

**Scope Mode:** Scope mode acts like a digital storage oscilloscope, providing high time-base resolution for viewing high-frequency signals. If the optional DSO-8 scope card is installed, high-speed scope captures up to five million samples per second can be acquired using Card mode.

**Review Mode:** Review mode provides the capability to review and analyze saved data captures and scope captures.

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**Help:** Within the **Dash 8Xe / Dash 8X**, three forms of help are available:

**Context Help** The context help feature provides context sensitive, on-screen help.



**Icon Help** The icon help button feature provides on-screen help for the buttons. A brief description of the selected button is provided when this button is depressed first.  
To be able to activate the buttons again, it is necessary to un-depress this button.



**Online Manual** The Adobe Portable Document Format (PDF) version of the manual is available in the **Dash 8Xe / Dash 8X** for on-screen viewing. This softcopy manual can be viewed on the **Dash 8Xe / Dash 8X** from Scope, Realtime or Review mode by selecting **Help>>On-Line Help** from the drop-down menu.



## 6. SETTING UP THE DISPLAY APPEARANCE

The **Dash 8Xe / Dash 8X** gives you total control over the chart layout. You can set individual channel widths, channel location, grids ON/OFF, and major/minor division sizing. You are also able to suppress or enable waveform display as well as vary the waveform trace thickness. Further, you can overlap some or all of the channels.

**Basic Channel Views:** The **Dash 8Xe / Dash 8X** provides basic channel views that you can access from the menu bar. These views allow you to choose a fixed number of channels to display. In Realtime mode, choices are Basic 2, 4, or All channels. In Scope or Review mode, choose from 1, 2, 4, or All channels.

**Custom Channel Views:** If you don't find a view from the Basic Channel Views described above, you can use the Chart / Display wizard. The wizard allows you to pick the number of channels to display. You can further customize your chart by overlapping or resizing the channels. You can also add, remove, or replace channels.

## 7. AMPLIFIER SETTINGS

For each channel of the **Dash 8Xe / Dash 8X**, a unique signal input module is installed in the right side of the recorder (example: IHV1). Each channel has unique amplifier settings. In addition to setting the span for the channel, you can also adjust the zero volt position. For convenience, amplifier settings can be copied to other channels, when the channels share the same type of signal input module. Further, user scaling is supported so that your channels can report their values to you in Engineering Units.

## 8. SAMPLE EXERCISES

### 9 Volt Battery Test

Items needed: 9 Volt battery. Signal input leads.

In the following hands-on exercise, you will set up a channel to monitor a 9 Volt battery in Realtime. Next, a data capture will be set up to record when the battery voltage is applied. Finally, the captured data will be reviewed.

**Note:** The steps below are for the **NDV1** or **IHV1** voltage modules installed in Slot 1 (Channel 1). Please contact Astro-Med if you have any questions regarding the use of other modules.

In the exercise, every action needed is detailed in a step-by-step fashion to help you quickly become familiar with the operation of the **Dash 8Xe / Dash 8X**. The **ACTION** on the left-hand side describes what is to be done. The **HOW TO** section provides the detailed steps to take using the pull-down menus of the Menu Bar and buttons.

#### I. Real-time Monitoring: Monitor the voltage of a 9 Volt battery.

Set up the channel so that when there is no signal, the waveform trace will be at the center of the channel and when the 9 Volt signal is applied, the waveform trace will be near the top of the channel.

<b>ACTION</b>	<b>HOW TO</b>	<b>(Use the Menu Bar Pull-Down menus)</b>
<b>Verify Menu Bar display</b>	If the date and time are shown at the top of the screen, press the <b>M</b> icon in the upper right hand corner to show the Menu Bar.	

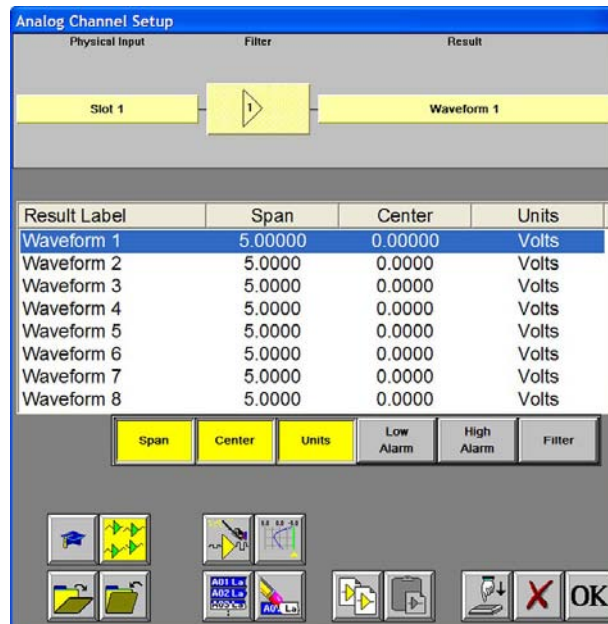
File Configuration View Setup Cursors Capture Service Chart Help

M

#### Dash 8Xe / Dash 8X Menu Bar

<b>Default the Dash 8Xe / Dash 8X</b>	Choose <b>Configuration</b> >> <b>Utilities</b> from the menu bar to open the Utilities window. Choose <b>Defaults</b> >> <b>System</b> from the menu bar to set the recorder to factory defaults. Click <b>Yes</b> to accept.
<b>Enter Realtime Mode</b>	Choose <b>Configuration</b> >> <b>Realtime</b> from the menu bar to enter Realtime Mode.
<b>View All Channels</b>	Choose <b>View</b> >> <b>Basic All Channels</b> from the menu bar.
<b>Set speed to 5 mm/sec</b>	Press the <b>[5 mm/s]</b> icon button on the control panel.

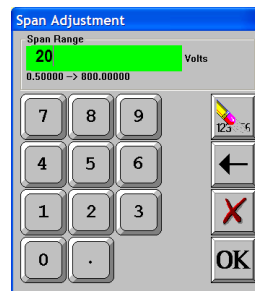
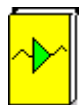




**Dash 8Xe / Dash 8X Amplifier Channel Settings Window**

**Set Channel #1 to be 20 Volts Full Scale**

Click on the **Amp Setup** button on the control panel. Highlight Waveform 1. This will bring you to the Analog Channel Setup window.



**Span adjustment keypad**

Press the **Span** column heading. Press the digit "2" and "0" to select twenty. Press **OK**.

**Input battery voltage into Channel #1**

Use the banana jack input connection located on the side of the Dash 8Xe / Dash 8X and input the battery voltage into Channel #1.

**Measure the battery voltage using the color display**

Click on the **Meter** button on the control panel to bring up the Meter on the left side of the display. Observe the battery voltage. Click on the **Meter** button again to remove the meter.



Remove battery voltage.

***This completes the first part of the exercise, Realtime Monitoring.***



## II. Data Capture Settings:

Add some buttons to your control panel first. Setup > Control Panel Settings > Capture > choose the following buttons



**Arm Capture > This will Arm and start the capture**



**Manual Abort > This will Abort the capture**



**Trigger Indicator > This will indicate that your trigger condition is set up properly when it is yellow, without actually doing a capture. If the trigger level is passed, this will just flash yellow, If your voltage stays at the trigger level, this will stay yellow.**

Set up a single data capture for 10 seconds. Of the total capture time, two seconds of the capture should show what the signal looked like before the battery voltage was applied. The sample rate will be 1,000 samples per second.



**Capture Settings Window**

### ACTION

### HOW TO

(Use the Menu Bar Pull-Down menus)

#### **Enter data capture setup**

Choose **Capture >> Capture Settings** from the menu bar for data capture setup.

#### **Select capture of Channel 1**

Highlight Waveform 1. Be sure the **Rate** for Channel 1 is **Standard**. If not, click on the **Rate** menu bar and select **Standard**.

#### **Set sample rate to 1 kHz**

In the Sample Rates box, press the down arrow titled **Standard Rate**. Scroll down and press **1,000**.



**Set capture for 10 seconds**

In the Storage Allocation box, press the units pull-down box and select **Seconds**. (Other choices are minutes, hours and Ksamples). Press the value box to open the Seconds Window. Press the digits "1" and "0". Press **OK**.

**Set trigger point at 20%**

In the Storage Allocation box, press the **Percent Pre-trigger** box. Press the digits "2" and "0". Press **OK**. Be sure there is a green check mark next to the Percent Pre-Trigger.

**Verify time of capture**

Below the waveform selection window, in yellow text, the Record Duration should be 10 seconds, the Pre-Trigger Duration should be 2 seconds.

**Set capture for one record**

In the Automation Box, be sure that both the Auto Re-Arm & Auto Archive are **not** checked. At this point, your Capture Settings Window should look like the image above.

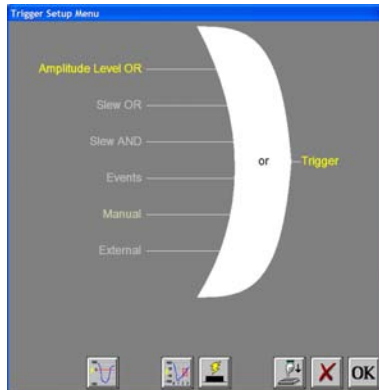
**Save and exit data capture setup**

Press **OK**.

***This completes the second part of the exercise, Data Capture Settings.***

**III. Trigger Setup and Data Capture:**

In the Data Capture Settings section above, a ten second capture was set up with two seconds of pre-trigger (data before the trigger). In this section, a trigger level of 8 Volts will be set with a rising slope so that as the signal rises and reaches 8 Volts, the data capture will be triggered.



**Trigger Settings Menu**

**ACTION**

**HOW TO (Use the Menu Bar Pull-Down menus)**

**Enter Trigger Settings**

Choose **Setup > Trigger Settings** from the menu bar to enter Trigger Settings.

**Select level triggering**

Press **Amplitude Level OR** to highlight in yellow. Be sure all other trigger types (other OR types, AND types, manual, etc.) are **not** highlighted. If so, press them to deselect.

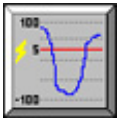


### Trigger Level

#### Set to trigger when 9 Volts is applied

Press the Trigger Level button at bottom. In the Trigger Level window, highlight Waveform 1. Press **Level**. Then press **New Value**. Press the digit "8". Press **OK**. Press **Slope**. Then press **Rise**. Press **OR**. Then press **Yes**. Press **OK** at the lower right hand corner of the menu.

**You have just set the trigger to be asserted when the signal input into channel one rises past 8 Volts.**



#### Save/exit trigger setup

Press **OK**. Press **OK**.

#### Test your trigger setup

Input the 9 volt battery voltage and verify the **Trigger Indicator** flashes yellow as it goes by the 8V set trigger level. If it doesn't, recheck your trigger setup.



#### Arm for capture

Click on the Arm button to start the capture. *The Capture Progress window pops up indicating status.*



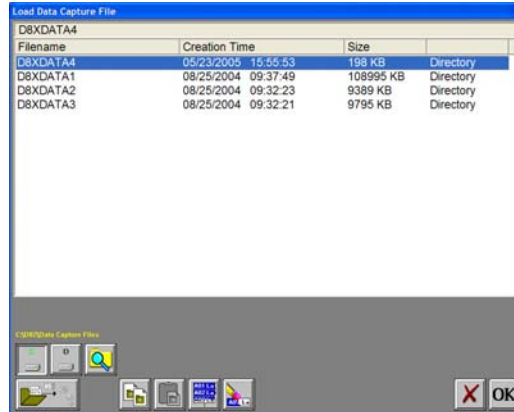
#### Input battery voltage into Channel #1

*A trigger should be produced and the capture continues to the end. While capturing, you should have seen the waveform for Channel #1 increase from the bottom of the channel to near the top of its channel.*

***This completes the third part of the exercise, Trigger Setup and Data Capture.***

#### IV. Data Review:

Data capture records can be reviewed on the color display. DVD-like control buttons allow for convenient scrolling through the data. Cursors can be placed on the data for measurements. During review, the timebase can be expanded or compressed to give appropriate detail of the signal. From the display, part of or all the data can be saved.



Filename	Creation Time	Size	Directory
D8XDATA4	05/23/2005 15:55:53	198 KB	Directory
D8XDATA1	08/25/2004 09:37:49	108995 KB	Directory
D8XDATA2	08/25/2004 09:32:23	9389 KB	Directory
D8XDATA3	08/25/2004 09:32:21	9795 KB	Directory

List of data capture records for review

#### ACTION

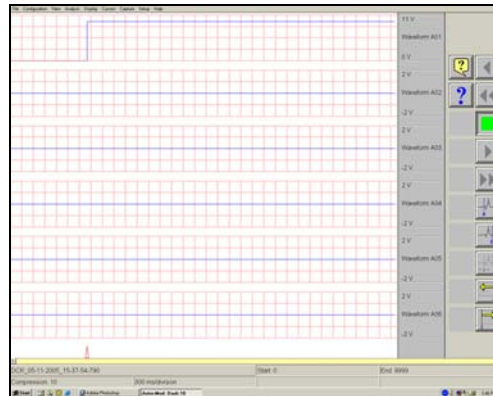
#### HOW TO (Use the Menu Bar Pull-Down menus)

##### **Enter Review Mode**

Choose **Configuration > Review** from the menu bar to enter the Review Mode.

##### **Select file to be reviewed**

Click on the top-most file name to highlight the capture. Press **OK**.



Data Capture Review of 9 Volt battery data capture

##### **Show entire capture**

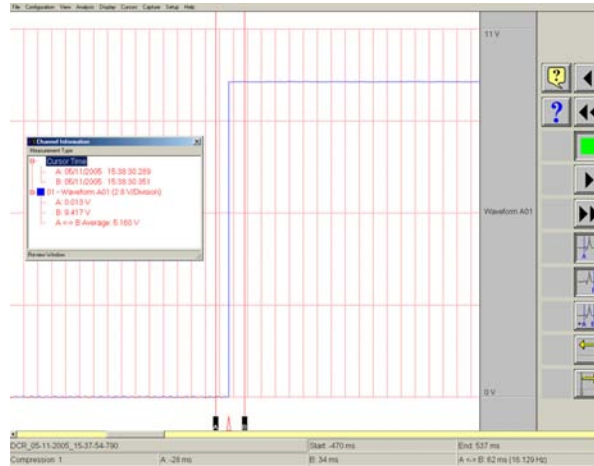
Choose **Display >> Show All File** from the menu bar to show entire capture.

*Note: If the entire file is already shown, a check mark will be next to Show All File in the Display pull-down menu already.*

##### **Show the trigger point**

Choose **Display >> Show Trigger Line** from the menu bar to show the trigger point.

*Note: The trigger line is shown as a red vertical line. If the trigger line is already shown, a check mark will be next to Show Trigger Line in the Display pull-down menu. Be sure the trigger line is shown on the display.*



### Using cursors to make measurements

#### Show only Channel 1

Choose **View > 1 Channel** from the menu bar to show only Channel 1.

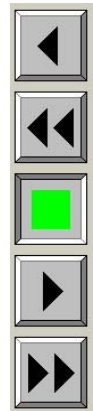
#### Expand the time base

Choose **Display > Compression** from the menu bar. Press the digit "1". Press **OK**.

#### Scroll through the data

Use **DVD** buttons. You can jog forward or backwards through the data. You can stop at any points of interest. Experiment scrolling forwards and backwards.

Continue to scroll and stop the display when you have the trigger point (red vertical line) in the middle of the display.



#### Cursors

Press the **A** cursor button. Slide the cursor just to the left of the trigger point.

Press the **B** cursor button. Slide the cursor just to the right of the trigger point.

*Hint: You can move the active cursor (black) by touching anywhere on the display and sliding your finger to where you want the active cursor or use the yellow arrow buttons to fine tune the location of the cursors. You can change the active cursor by clicking on the button below the A & B cursor buttons. This button will toggle between A, B, and AB to change which cursor is active or make both active.*



#### Time measurements using cursors

Choose **View >> Status Text Format >> Relative Time** from the menu bar. Observe the time values shown at the bottom.

**Add the Channel Information button**

Setup > Control Panel Settings > View > Channel Information



**Amplitude measurements using cursors**

Click on the Blue **I** button to bring up the Channel Information. You can resize by grabbing the lower right hand corner. You can move it by clicking on the heading and dragging it. You can choose measurement type by clicking on the heading

**Measurement Type.**

Move Cursor **B** by sliding it to the right. As you move the cursor, observe the change in values in the Channel Information window.

**Remove the cursors**

Press the cursor **A** and **B** buttons to remove them.

**Show entire capture**

Choose **Display > Show All File** from the menu bar to show entire capture.

***This completes the sample exercise.***

## 9. ARCHIVING DATA RECORDS

There are two hard drives in the **Dash 8Xe / Dash 8X**. The first is the Windows (System) drive and the second is the data capture drive. During data capture, the data is streamed to the data capture drive. Once the data capture is complete, the file can be reviewed on the **Dash 8Xe / Dash 8X**. However, to export the data out of the **Dash 8Xe / Dash 8X**, the user must archive it from the data capture drive to the Windows (system) drive or directly to an external USB source.

The data capture drive is not accessible through Windows Explorer. The only way to export or archive the data off the capture drive is by using the **Dash 8Xe / Dash 8X** software environment. Data is handled this way in order to maintain the integrity of the recording.

**ACTION**                      **HOW TO**                      **(Use the Menu Bar Pull-Down menus)**

**Enter Review Mode**                      Choose **Configuration >> Review** from the menu bar to enter Review Mode.

The screenshot shows a table with the following data:

Filename	Creation Time	Status	Size
DCR_01-14-2009_11-05-09-...	01/14/2009 11:05:09	Valid	126 KB
DCR_01-14-2009_10-53-00-...	01/14/2009 10:53:00	Valid	126 KB

Annotations and icons are as follows:

- Files on data capture drive not Windows (system) drive. Select to review or archive. Selected file will be highlighted.** (Pink box pointing to the first row)
- Scope Captures: Lists scope capture files on Windows (system), or external drive. Note: Scope captures are stored directly to the Windows (system) drive. Think of these items as "automatically archived."** (Blue box pointing to the second row)
- Archived Data Captures: Lists archived data capture files on Windows (system), or external drive.** (Grey box pointing to the bottom right)
- Archive Selected File: Archives selected data capture file/files to selected Windows (system), or external drive.** (Green box pointing to the 'Archive' icon)
- Selected archive destination.** (Green box pointing to the 'Browse/select archive destination' icon)
- Open selected File** (Yellow box pointing to the 'OK' button)

Bottom icons and their functions:

- Send file to trash
- Restore file from trash
- Empty trash
- Select all files
- Deselect file/files
- Browse/select archive destination.
- Open selected File

### Summary of Review Mode Screen Icons

#### Choose Archive Directory

By default, the file will be saved on the system drive (C) in the noted location. The path to this location is displayed in yellow text (see above). If necessary, the file can be saved in a different location. To select an alternative file location, the Browse/select archive folder button.

The Browse for Folder window will appear.





**Browse for Folder window**

**Note:** The *Dash 8Xe / Dash 8X*, USB port is assigned drive letter D.

**Select File Location**

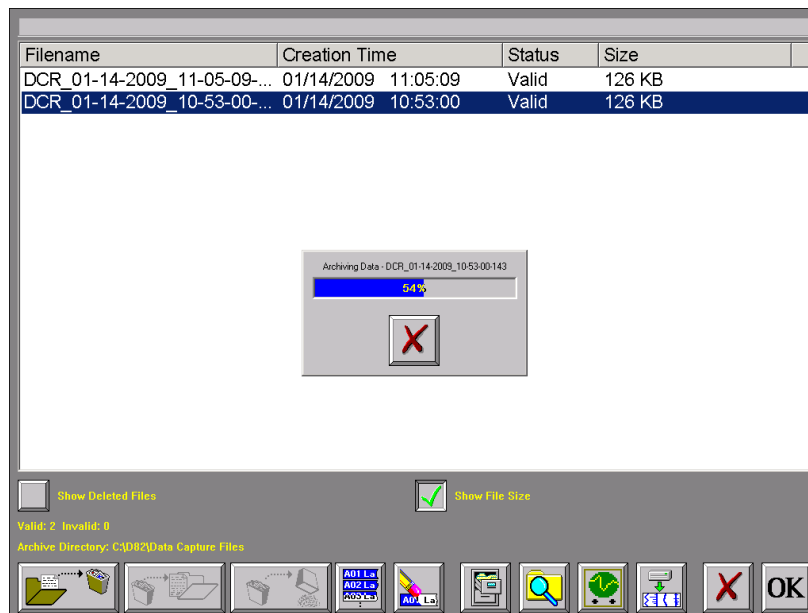
Select a file location and choose the **OK** button on the Browse for Folder window. The path displayed in yellow text will be updated to indicate the new file destination.

**Select File to Archive**

Select the file that you wish to archive. The selected file will be highlighted.

**Archive File**

Select the Archive File button to archive the selected file. A status pop-up will appear showing the percentage completed. Once the file has completed archiving, select **OK** to exit the Review mode screen.



**Review Mode Screen Showing Archiving file Status**

**Note:** The *Dash 8Xe / Dash 8X* series offers additional methods to archive data. The user can archive all or part of a file while reviewing along with archiving in ASCII format. Please see the *Dash 8Xe / Dash 8X* operations manual for additional information.

**This concludes the Archiving Data Records section.**

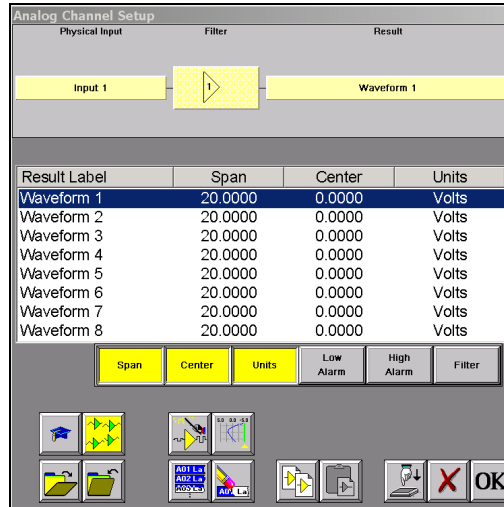


## 10. ENTERING ENGINEERING UNITS

Engineering units provide the capability to display user-selected units instead of voltage. All signal information enters the **Dash 8Xe / Dash 8X** as voltage. However, converting the voltage unit to an alternative unit of measure may be desirable in applications that measure current, pressure, strain, or any non-voltage unit.

This allows the **Dash 8Xe / Dash 8X** to be compatible with transducers and probes that can provide a voltage output to the **Dash 8Xe / Dash 8X**. The relationship between the voltage and the engineering unit is assumed to be linear, characterized by a slope and offset ( $y = mx + b$ ).

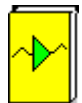
The following is an example of entering engineering units into the **Dash 8Xe / Dash 8X**. For this example, we will assume we are entering the engineering units for a current probe that provides a **10mV/A** voltage output to the **Dash 8Xe / Dash 8X**.



*Dash 8Xe / Dash 8X Amplifier Channel Settings (Analog Channel Setup) Window*

**ACTION**                      **HOW TO**                      **(Use the Menu Bar Pull-Down menus)**

**Set the engineering units on Channel #1 to be 10mV/A**      Click on the **Amp Setup** button on the control panel. Highlight **Waveform 1**.



**Open User Units Menu**      Click on the gray heading button **Units >> Enter User Units**, the **User Unit Setup – Waveform 1** window will appear.

**Enable User Units**      Click on the Enable **User Units** box located in the top center of the window, so there is a green check mark in the box.

**Enter User Unit**      Click on the **Engineering Units** box under the **Enable User Units** box. A keypad will appear. Erase the unit **Volts** and enter **AMPS**.

**Enter Scale**      Under the **Engineering Units** box there is a section named **Scale**. Now that you have entered **AMPS**, you can now enter either **AMPS/Volts** or **Volts/AMPS**.

Since our probe has a **10mV/A** output, we will enter **0.01** into the **Volts / AMPS** box.

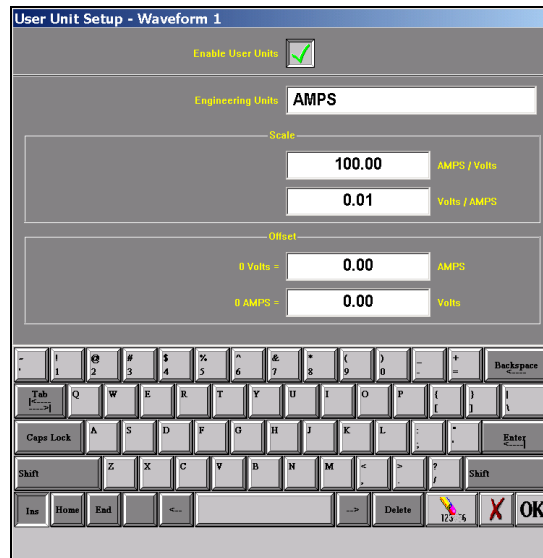
Press the **Volts / AMPS** box and enter **0.01** into the **Scale** keypad.

Press **OK** on the **Scale** keypad.

Press **OK** on the **User Unit Setup – Waveform 1** screen.

Press **OK** on the **Analog Channel Setup** window.

Waveform (Channel) 1 is now set to measure current using a 10mV/A current probe.



**User Unit Setup – Waveform 1**

***This concludes the engineering units example.***

## **11. POWERING DOWN**

When the power switch is set to the off position or if AC power is lost or removed, the Dash 8Xe / Dash 8X begins the power down sequence. This is indicated by the green LED next to the power switch that will be on while the power down sequence occurs. Note that the LED will either be a solid green or it may flicker. It is **very important** not to turn the power switch back to the on position during the power down stage. The Dash 8Xe / Dash 8X must be allowed to complete the power down sequence, which includes Windows closing properly in the background, to insure proper operation.

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This completes the **Dash 8Xe / Dash 8X** Quick Start Guide. Please note that the **Dash 8Xe / Dash 8X** has much more capability than presented in this guide. Please see the Operations Manual for details. Should you require additional assistance, you can contact our Technical Support Department toll-free at 877-867-9783 or by e-mail: [techserv@astromed.com](mailto:techserv@astromed.com)