DASH II RECORDER

QUICK START GUIDE

Supports Recorder System Software Version 21.4

REALTIME RECORDING

ADVANCED OPERATIONS

2. INTRODUCTION

Thank you for purchasing the Astro-Med DASH II chart recorder. It is important that you read the enclosed operations manual. You simply will not get the most out of your DASH II unless you do. However, it is human nature for you to want to get started right away. We understand this, and have prepared a Quick Start Manual to let you get acquainted with the DASH II as quickly as possible. We hope you enjoy it - and your new recorder. But then please read the operations manual - you'll be glad you did.

3. GETTING STARTED

VOLTAGE VERIFICATION Verify that the voltage selection cylinder through the window on the fuse block is set to the voltage that you will be using.

CONNECT AC POWER Connect the AC power cord to the DASH II rear panel, then to an outlet.

LOAD CHART PAPER Locate the free roll of paper included with your recorder. Open the box and remove the paper. Open the paper chamber door by pressing the paper chamber door release. Place the paper in the chamber such that it unwinds from the bottom of the roll. Allow a few inches of paper to extend out of the chamber and close the paper chamber door.

TURN ON DASH II When you turn on the DASH II, the backlit LCD display will read DASH II Initialization, then the recorder will display the real-time idle state menu. The upper line of the display will indicate the time and date while the lower line will show the chart type and speed alternating with the state of the recorder. The recorder states are real-time or data playback and running or halted.

START RECORDING Signal input cables are not supplied with the DASH II. You must supply the signal input cables. Using standard banana jack connectors, bring your signals into the recorder at the front panel input connectors. Press the [RUN/HALT] key. The DASH II will begin recording. Look at the left edge of the chart - the System Log repeatedly prints the time, date, chart speed and time scale. Reference the Operations manual to change the time and date.

HALT Experiment stopping the chart by pressing the [RUN/HALT] key.

CHANGE SPEEDS Press and release the [SPEED] key. The four softkeys below the display will now control the programmable speeds. The programmable speed keys provide a means to quickly set the common chart speeds. The factory programmed speeds are: 10, 25, 50 and 100 mm/sec.

- While the chart is running, press the softkey below 100 and watch the speed change to 100 mm/sec.
- Press the softkey below 50 and watch the speed change to 50 mm/sec.

Practice changing speeds with the programmable speed keys. Consult the Operations Manual to change these values.

- Press and hold the [SPEED] key to access the Speed menu.

SPEED MENU

Set Keys	Chrt Spd	Dlog Spd	Mtr Srce

- Push the softkey below [Chrt Spd] to manually change the recorder speed. The current chart speed will be flashing on the upper line of the display. Use the encoder wheel to change the speed to any value between 1 and 125. Push the softkeys below [sec] or [min] to change the timebase between mm/second and mm/minute.
- Turn the encoder wheel until the "CHART SPEED" reads 5 mm/sec.
- Press the softkey below "back" to accept this value. The DASH II will return to the Chart Speed Menu.
- Press the softkey below [Dlog Spd] to set the data logger speed. For this recording mode, the speed is set in seconds/line or minutes/line, using the encoder wheel as above. This mode has speeds ranging from 200msec/line to 999 min/line.

4. SETTING UP CHARTS AND GRIDS

The DASH II has four recording modes. You can select between two discrete grids of 40mm each, two discrete grids of 50mm each, a single large grid of 100mm with overlapped waveforms or a numerical data logger. You can also turn the grids on/off, select the major and minor division sizing, position the waveform anywhere on the grid, suppress or enable the printing of waveforms and vary the waveform trace thickness.

CHARTS AND DATA LOGGER To select one of the charts or the data logger:

- Press the [MENU] key. The main menu will appear.

MAIN MENU

Chrt Type	Chrt Ctrl	Spd Ctrl	Syst Ctrl

- Press the softkey below "Chrt Type." You will have the following four options:

  2 Grd 40mm - provides two 40mm wide grids, one for each channel.
  2 Grd 50mm - provides two 50mm wide grids, one for each channel.
  1 Grd 100mm - provides a single 100mm grid with both channels overlapped.
  Data Log - Provides a numerical data logger.

To illustrate the differences between chart types, let's choose the 100mm, overlapped chart.

- Press the softkey below 1 Grd 100mm.
- Press the [RUN/HALT] key to run the new chart.

CHANGE GRID The DASH II allows you to modify the grids to suit your needs. Please refer to the Operations manual for details on changing grids.

STORING SETUPS TO DISK A setup file consists of the specific parameters used in a recording setup, including: chart type, grid settings, zero and gain settings, speed settings, chart annotation and trigger settings. Let's demonstrate how setups are saved from the recorder to a floppy disk and loaded from a floppy disk to the recorder.

- Press the [MENU] key a second time. The second screen of the main menu will appear.

SECOND SCREEN OF THE MAIN MENU

Trig Ctrl	Capt Cnfg	Plbk Cnfg	Disk I/O

- Press the softkey below "Disk I/O." The Disk I/O menu will appear.

DISK I/O MENU

File Mgmt	Syst File	Recd File	 More

- Place a DOS formatted, 3.5" floppy disk into the disk drive on the front panel of the Dash II.
- Press the softkey below "Syst File." You will have the option to save, load, execute and go back to the previous menu.
- Press the button below "Save" and rotate the encoder wheel until the flashing file name reads: "DASH2_xx.NEW" where xx designates the file number and can range from 01 to 99.
- Press the softkey below "EXEC" to save the setup configuration file. Notice that the file extension changes from .NEW to .CFG.

To load a system configuration file from a floppy disk:

- Place a disk containing the desired setup file into the disk drive on the front panel of the Dash II.
- From the Disk I/O menu, press the softkey below "Syst File."
- Press the softkey below "Load" and rotate the encoder wheel until the desired setup file is flashing on the screen. The file name should read "DASH2_xx.CFG" where xx designates the file number.
- Press the softkey below "EXEC" to load the file into the recorder.

5. SETTING UP ZERO AND GAIN

The [CH1] and [CH2] keys (Channel 1 and Channel 2) are used to set a variety of parameters, including: turning each channel on/off, selecting a voltage sensitivity for a channel, selecting a location for the input zero position, suppressing a DC component of the waveform input, choosing between RMS and peak to peak recording modes, grounding the input signal, selecting between standard voltage inputs and bridge inputs, selecting filters and calibrating each channel.

- Press the [CH1] key. The Channel 1 menu will appear. *Note:* The channel 2 menus and operations are identical to those of Channel 1.

CHANNEL 1 MENU

1 - DC	5.0 V fs		
Sens	ZS		Pos

The first line shows the channel status. In the above example, channel 1 is in DC mode at a sensitivity of 5.0 volts full scale.

SENSITIVITY In the new generation DASH II recorder, voltage is expressed in reference to full scale. Since signal size is independent of grid size, a finer or coarser view of the signal data can be obtained by adjusting channel sensitivity.

- Press the softkey below “SENS”.
- Turn the encoder wheel to adjust the sensitivity for the selected channel. Sensitivity is expressed as either mV full scale or V full scale. Sensitivity can range from 50mV full scale to 350 V full scale.

ZERO SUPPRESSION When a waveform input signal contains an unwanted direct current (DC) component, zero suppression can be used to remove up to 250V, depending on the channels range. See the Operations Manual for more information.

- Press the softkey below “ZS” to and use the encoder wheel to adjust the zero suppression for the channel.

ZERO POSITION The DASH II has a zero position parameter which enables the zero baseline to be placed anywhere on the grid.

- Press the softkey below “Pos” and use the encoder wheel to adjust the zero position of the waveform on the grid. The position is expressed in percentage of the grid with 0% being the center, +50% being the left edge and -50% being the right edge.
- Press the [CH1] button a second time. The second screen of the channel 1 menu will appear.

SECOND SCREEN OF THE CHANNEL 1 MENU

1 - DC	Signal Control		
Gnd	Brdg	Off	Cal

DC/GND
- Press the softkey below “Gnd” to toggle between DC and ground.

BRIDGE
Bridge inputs are used for transducers which require an input current from the recorder in order to produce a measurable voltage. These types of transducers include strain gages, LVDTs, pressure transducers and load cells.
- If you will be using the bridge inputs, disconnect any voltage input cables from the recording channel and connect the transducer to the D-Shell connection marked “Bridge” on the front panel of the Dash II.
- Press the softkey below “Brdg” to switch channel 1 to a DC bridge input. Press the softkey again to return to DC signal inputs.

CHANNEL ON/OFF
- Press the softkey below “Off” to toggle channel 1 on/off.

CALIBRATION
Refer to the Operations manual for information on calibration.

- Press the [CH1] key a third time. The third screen of the channel 1 menu will appear.

THIRD SCREEN OF THE CHANNEL 1 MENU

1 - DC DSP	20 Hz LP		
Off	Notch	LPass	RMS

The Dash II is equipped with digital signal processing (DSP) including filters and RMS data conversion. Filters are used to remove unwanted signal from the desired data, for example, 60Hz power line noise from

a 10Hz signal. The upper line of the display shows the DSP status of the channel. In the above example, channel 1 is in DC mode and has a 20Hz lowpass filter.

DSP ON/OFF

- Press the softkey below "Off" to toggle DSP on/off.

FILTERING

- Press the softkey below "Notch" to toggle on a notch filter. Use the encoder wheel to select either a 50Hz or a 60Hz filter.
- Press the softkey below "LPass" to toggle on a lowpass filter. Use the encoder wheel to select any frequency to filter, from 1Hz to 500Hz.

RMS

- Press the softkey below "RMS" to change the signal to root mean square (RMS). Use the encoder wheel to select a time base for the RMS processing, either slow, medium or fast.

6. ADVANCED OPERATION: SETTING UP DATA CAPTURE

Data capture allows you to record data to the internal RAM in the recorder. The DASH II has the ability to capture up to 256 kilosamples of data per channel. Once in memory, you can playback to data at will, expand the data for better resolution and download the data to a 3.5" floppy disk for permanent archiving. Once on a floppy disk, the data can be easily transferred to a PC for analysis using third party spreadsheet/analysis software. As you can see, data capture is a very powerful tool which can be used for many applications.
In order to complete a data capture you must define several parameters, set the triggers and arm the system to respond to the triggers. The parameters which must be defined include:

- Sample Rate - The rate at which data is collected
- Triggering - The method by which the data capture is initiated. Either timer, waveform or manually.
- Trigger Position - the amount of data which is collected before the trigger. This allows you to see the events leading up to the trigger.
- Record Size - The amount of internal RAM which is allocated to a single data capture.

To illustrate the data capture process, we'll setup a sample data capture. First, let's go into the capture configuration menu.

- Press the [MENU] key twice.
- From the second screen of the main menu, select the softkey below "Capt Cnfg." The capture configuration menu will appear.

CAPTURE CONFIGURATION MENU

Capt Ctrl	Trig Pos	Capt Optn	Back

- Press the softkey below "Capt Ctrl."
- Press the softkey below "Mode" and use the encoder wheel to select the data capture mode. You can select either manual or auto triggering and either safe or overwrite modes for file storage.

Since there is only a finite amount of RAM within the recorder, you must select how you want the memory used. In safe mode, the recorder will save data only until the memory is used up. Earlier files will not be overwritten by later files and all of the data within the recorder will be safe. In overwrite mode, when the memory is used up the recorder will overwrite the oldest files. This allows the recorder to continue

capturing the latest data at the expense of older data. Manual triggering means that some outside event must occur before the recorder will start collecting data. Auto triggering means that the recorder will begin capturing data as soon as the recorder is armed.

- For our example, select "Manual/Safe."
- Press the softkey below "Rate" and use the encoder wheel to select a sample rate from 1 sample every minute to 10KHz (1 sample every 100usec). For our example, select 1 KHz.
- Press the softkey below "Size" to select the number of samples collected in this capture. Use the encoder wheel to select from 1 K Sample (1000 samples) to 256 K Samples. For our example, select 1 K Sample.
- Press the softkey below "Back" to return to the capture configuration menu.

You are able to change the location of the trigger within the window of the data capture. This enables you to control the amount of pre-trigger and post-trigger data that is captured. For example, if you want 50% of the data that you capture to be pre-trigger data and 50% of the data to be post-trigger data, then you would set the Trigger/Window to "center". Let's try this.

- Press the softkey below "Trig Pos" and use the encoder wheel to set the trigger position. For our example, set the trigger position to 20%.
- Press the softkey below "back" to return to the capture configuration menu.

Now, we are going to setup the trigger.

- Press the softkey below "Back" to return to the second screen of the main menu.
- Press the softkey below "Trig Ctrl." The Trigger Menu will appear.

TRIGGER MENU

Trig Ch1	Trig Ch2	Trig Srce	 Back

- Press the softkey below "Trig Srce."
- Press the softkey below "Chns" until the screen reads off.

The recorder is now in manual trigger mode and must be armed and triggered by the user.

- Press the [ARM] key on the front panel.

Notice the light next to the [ARM] key turns on to signify that the system is armed and awaiting capture. The screen shows:

Capture: #xxxxx Waiting Trig	 Abort

Where "#xxxxx" is the data capture file number.

- Press the softkey below "Abort" if you wish to abort the capture.
- Press the [TRIG] key to trigger the data capture.

When the capture is complete, the screen will display the following message:

Capture: done-#xxxxx Plbk	Arch	Info	Back

Congratulations! You have just completed a data capture. Now let's play the data back.

- Press the softkey below “Plbk.” The playback configuration menu will appear. Note: You can also reach the playback configuration menu from the from the second screen of the main menu.
- Use the encoder wheel to select the file to be played back. The file name will be in the form “D2_xxxxx.MEM” and will be flashing on the upper line of the display.
- Press the softkey below “Optn.” The data playback options will appear.
- Use the encoder wheel to select a magnification factor. The Dash II can magnify a data capture up to x25 or compress the data capture to 1/25. For our example, select a magnification of x2.
- Press the softkeys below “Info” and “Mark” to toggle on the file information and the trigger mark on the playback.
- Press the softkey below “back” to return to the playback configuration menu.
- Press the softkey below “Play” to start the data playback.

You have just completed playing back the data you captured to the display and to the chart.

Once again we would like to thank you for purchasing the Astro-Med DASH II. We hope this Quick Start Manual was useful, however we do encourage you to read the Operations Manual in order to get the most out of your DASH II.