

NEW TECHNOLOGY ISSUES

(Provided by Manufacturers)



SENSOR ADJUSTMENT FEATURES FOR TEST DATA ACQUISITION AND DISPLAY

By Raymond Nelson

Acquisition and display of test data are among the core capabilities of the LXSoftware 11.2.2, and sensor adjustments are among the most frequently used features by field examiners everywhere. Adjustment of test data during both recording and review is central to the skillful and effective use of the polygraph instrument. Sensor arrows can be seen on the right side of the computer screen during data acquisition and during review, and are related directly to the component sensors that are attached to the examinee during testing.

Sensor options

Sensor options can be accessed in two ways: via the *Preferences* item on the *Tools* menu, and also via *double-click* on the sensor arrow. Options include the activation and deactivation of each available sensor arrow, along with visual options such as the default gain setting, tracing color, bold display of the plotted on-screen data, and the sensor ID label. *Double-clicking* the gray area surrounding the sensor arrows will open the preferences dialogue and the look/feel summary, from which visual changes can be made to multiple elements. With the exception of activation/deactivation, changes to visual sensor options have no effect on the recorded physiological data.

Sensor location

The vertical location of each tracing sensor can be adjusted by using the computer mouse to *click+drag* the arrow to any vertical location. Changes to vertical location will be saved when a new chart is recorded. If the LXSoftware is closed without recording a new test chart, changes in sensor location will be lost, and the sensor will return to the previous saved location.

Trace sensitivity/gain adjustment

Sensitivity of displayed physiological response activity can be adjusted via the sensor arrow gain settings, which is controlled by the *up/down* toggle buttons on the right side of the sensor arrow.

Centering (local offset) adjustment

Click (left-click) the sensor arrow to center/re-center the data at the sensor arrow. The vertical location of the data will be moved to the sensor arrow. The displayed location of data acquired prior to the centering event will not be changed. A centering event is recorded, but no actual change is made to the recorded physiological data. Centering events are normally used to locate tonic activity at the sensor arrow, and centering events should not be entered during phasic response activity or during the time period for which phasic responses will be measured or scored. Centering events will be easily identified, and differentiated from physical movements, by an arrow on the displayed chart data.

Offset (global offset) adjustments

An alternative to both moving the sensor arrow and re-centering the data is to offset the vertical

location of the data. This is accomplished during both data acquisition and display by using *ctrl+click* on the *up/down* toggle buttons (hold down the “ctrl” key while clicking the up/down toggle buttons). This will incrementally move the data up or down. Offset adjustments made in this manner are global in that the recorded data will be moved from the onset of recording until the end of recording, or the current location during recording.

Data can be rapidly offset at the sensor arrow during recording and display by using *alt+click* on the *sensor arrow* (hold down the “alt” key while clicking the up/down toggle buttons). Offset adjustments made in this manner are global; the recorded data will be moved from the onset of recording until the end of recording, or the current location during recording. Rapid offset adjustments during recording will offset the current location at the sensor arrow. The advantage of the offset feature is that no permanent change is made to the vertical location of the sensor arrow. During review, first *click* to select a *question* and then use *alt+click* on the *sensor arrow*.

Changes to the offset can be removed by using *ctrl+click* on the *sensor arrow* during both recording and display. Removing the offset adjustment in this manner will cause the data to be displayed at the recorded value, which may be above or below the sensor arrow.

Playback (VCR) controls

Playback controls (sometimes referred to as VCR controls) can be used while reviewing the recorded physiological data, and include several options to display the data as a moving time series similar to that observed by the examiner during recording. Options include: play, stop, pause, fast forward, and return.

Window resizing

Windows can be re-sized by *click+dragging* the edges of the data acquisition or data display windows. Alternatively, windows can be hidden or displayed by clicking the *maximize* and *minimize* buttons at the upper right corner of each window.

Sensor context menu

Right-click on a *sensor arrow* to access a *sensor context menu* that displays a list of features for the sensor. Menu items will include the following: options (an alternative to double-clicking the sensor arrow), *gain* adjustment (alternative to using the up/down toggle buttons), *bold* (can also be set from the sensor preferences dialog window) and *show centering*. These options are limited to *gain* and *bold* if you *right-click* the *sensor arrow* during recording.

Chart context menu

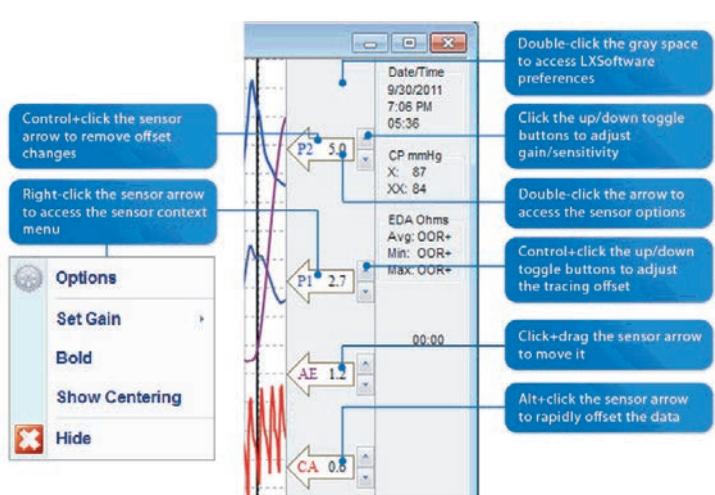
To access a *chart context menu* that displays a list of features for the chart, *right-click* on any *white space* in the data acquisition or display window. Menu items will allow the entry of a chart comment and access to the LXSoftware preferences (the same as selecting the preferences item from the tools menu). Menu items also provide access to zoom, print, export to PDF and scoring features. The context menu also allows control over the display of the chart grid, calipers, watermark, centering event, and chart comments. An additional feature of the chart context menu is the option to *Save Current View* and *Switch View*, meaning that you can save the sensor and display adjustments for later review.

Saved views

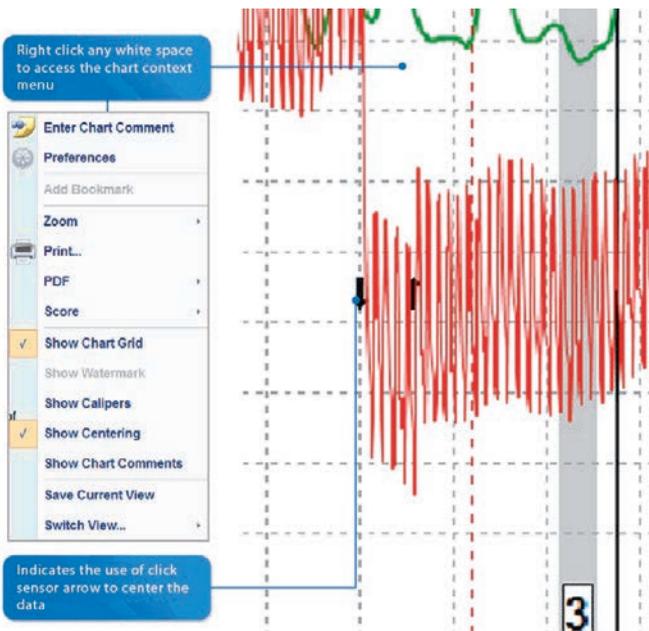
Recorded physiological data are displayed on screen upon completion of recording of each test chart. The examiner has an opportunity to review the data from start to finish, and to *dress* the

data display by making any final adjustment to maximize the efficiency of measurement, scoring and interpretation tasks. The test chart can be closed by clicking the X-button at the upper right of the test chart window. Adjustments are saved *as recorded* when the test chart is closed for the first time.

Adjustments, using all sensor adjustment features, can also be made subsequently at any time the test chart is opened and displayed. These subsequent changes can also be saved, for the *examiner, reviewer* and *2nd reviewer*, making it easy to review the test chart later using the same adjustment



settings. Displayed data can be changed to view the recorded data using settings preferred by the examiner, reviewer or 2nd reviewer by selecting the *Switch View* item at the bottom the *right-click* on any *white-space* to access the *chart context menu*. No changes are ever made to the recorded physiological data, and the data can be displayed *as recorded* at any time.



Although many of the adjustment features available on contemporary computerized polygraph instruments can be traced back to earlier analog instruments, computer software allows for features that may have been unimaginable to pioneers and engineers of early polygraph technologies. All of these features are available in version 11.2.2, and can be used with both the LX4000 and LX5000 data acquisition systems.

While these features may not have a direct effect on the criterion or

construct validity of the test, familiarity with and skill in using these functional capabilities can improve the ease and satisfaction with which well-trained examiners are able to acquire highly usable and highly interpretable physiological data that lead them to a confident test result. The LXSoftware 11.2.2 sensor adjustment capabilities are perhaps the most fully featured and powerful set of data acquisition and display adjustment features ever available to the polygraph profession.

For more information, you can contact Lafayette Instrument Company directly at (765) 423-1505 or info@lafayetteinstrument.com.