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TacElevate (TE120318a)
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MAIN READOUT
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The area at the top left of the screen is the main readout, which contains three lines of text. The large middle line is the current angle reading, the upper line indicates the relative zero reference that has been set by the user, and the lower line indicates whether the displayed value is absolute or is relative to the zero reference set by the user. Tapping the readout changes the displayed measurement unit. The available angle units are the degree, mil, milliradian (mrad), and percentage slope. A fifth unit that can be displayed is the gravity fraction (G) in the direction along the incline.

LEVEL BARS
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The two horizontal bars graphically indicate the absolute angle and settling of a measurement. The lower blue bar (and its displayed numerical value) always tracks the measured angle at the Normal (as opposed to High) resolution mode setting. The upper yellow bar graphically tracks either Normal or High resolution mode readings, depending on the setting of the resolution button (discussed later below). When in the Normal resolution mode the upper bar will match the lower bar extension. In addition, the main readout at the upper left will show the same numerical value as that of the lower blue bar. In High resolution mode the upper bar will track the higher resolution measurement value displayed in the main readout, moving separately and responding more slowly with respect to the lower bar. The difference in the alignment of the two bars is an indication of the settling still taking place between angle changes during high resolution measurement. The unit has settled when the notches at the ends of each of the bars are aligned. (It may be observed, when in the high resolution mode, that the lower blue bar has a random jitter with respect to the upper yellow bar. This is related to the faster response and less smoothing of the lower resolution signal processing, compared to that of the higher resolution processing.)

MAIN CONTROL BUTTONS
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The lower left area of the screen contains the the four main control buttons, which are for setting resolution, displaying the roll offset indicator, choosing the relative zero, and setting a temporary user zero.

RESOLUTION

The resolution button shows "Normal Res" when the system is in the normal resolution display mode (example display: 0.5 degree, or 9 mil), and "HIGH Res" when at the higher resolution mode (ex: 0.53 degree, 9.4 mil). When in high resolution mode, the displayed value may take a considerable amount

time to settle. One should wait at least 15 seconds for measurement to settle after a large angle change in high resolution mode; 30 seconds to be completely sure there is nothing more to be gained by waiting longer. In normal resolution mode the displayed angle settles completely within about 3 seconds.

ROLL OFFSET

The roll offset indicator is used as a graphical reminder that the device may not be well aligned with the main measurement axis when at high angles. When the button is tapped, its label changes to "SHOW Roll", and a red bar will appear, centered on the screen, that extends perpendicular to the main measurement axis. The extension of the bar to the far edge of the display indicates that the device has been rolled to approximately 5 degrees from the central axis. Action should be taken to realign the device such that the bar never extends to the edge of the screen.

It should be noted that the App automatically detects face-up and edge measurement situations. The nature of both the face-up/edge modes and the roll offset indicator are best understood by holding the device and observing how the roll bar changes. To do this, first turn on the roll offset indicator ("SHOW Roll"), and hold the device face-up (flat). Rolling the device a small amount, front to back, to either side of horizontal, will show how the roll indicator responds under poor alignment situations. Similarly, place the device on its lower edge, so the display is vertical, and again roll the device front to back, to either side of vertical, and notice how the roll bar responds.

ABSOLUTE/USER ZERO

Tapping the button at the lower left of the screen will change the relative zero setting of the angle displayed in the main readout. When the button label shows "ABS Zero", the main readout shows the Absolute, or actual, angle of the device, relative to its zero calibration point (described later below). When the button is tapped to show "USER Zero", the main readout displays the angle relative to the user-set zero point, indicated by the top and bottom lines in the main readout. It should be noted that when the main readout shows an angle relative to the user zero, the upper yellow level bar will continue to graphically display the Absolute angle.

SET USER ZERO

When in relative zero mode the zero button displays "USER Zero" and the "Set User Zero" button to its right becomes enabled. When "Set User Zero" is pressed, the device captures a snapshot of the current angle of the device. The captured value will be displayed in the top line of the main readout, and will be used as the user zero setting. It should be remembered to wait for the device to settle completely before setting the user zero. To clarify, based on settling times, one should wait 3 seconds in Normal Resolution mode, and 30 seconds in High Resolution mode, before pressing the "Set User Zero" button. (The device in fact captures separate normal and high resolution zero values simultaneously, and the "User Zero" value in the main readout will switch to the appropriate captured user zero value according to the resolution setting.)

CALIBRATION

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Double-tapping the "Cal" button, at the lower right of the screen, will change the display to show the main Calibration Start Page, from which one can begin any one of three types of calibration, which include Range, Face-up Zero, and Edge Zero. The Range Calibration should be performed before the other two procedures, and ideally before the App is used for accurate measurement.

RANGE Calibration

Pressing "RANGE" on the Calibration Start Page begins a user-assisted procedure to set the maximum range (and proper scaling) of the internal sensor. Instructions for completing calibration are shown on the screen during the procedure. Once complete, results are automatically stored, and the procedure does not typically have to be repeated. If the procedure is cancelled part way through, any results are discarded and the previous Range calibration data is maintained. This calibration procedure should be completed prior to any other calibration, and prior to general use of the App. The procedure can be repeated at any time, as desired.

FACEUP Calibration

Pressing "FACEUP Zero" on the Calibration Start Page begins a user-assisted procedure to set the absolute zero (physical level) point, when the device is face-up (lying on its back). Instructions for completing calibration are shown on the screen during the procedure. Once complete, results are automatically stored, and the procedure does not typically have to be repeated for each use. However, the effect of shifts in the protective cover - that may be used on the device - can be mitigated by repeating this procedure just before a measurement. If the calibration procedure is cancelled part way through, any results are discarded and the previous Face-up Zero calibration data is maintained. It should be noted that this procedure should be performed on a very flat surface, but that the surface does not have to be accurately horizontal; +/-5 degrees is acceptable. Also note that this absolute zeroing of the device is not required, and does not effect, applications where the relative User Zero is used.

EDGE Calibration

Pressing "EDGE Zero" on the Calibration Start Page begins a user-assisted procedure to set the absolute zero point when the device is upright, typically resting on its lower edge. Instructions for completing calibration are shown on the screen during the procedure. Once complete, results are stored and the procedure does not typically have to be repeated. However, the affect of shifts in the protective cover can be mitigated by repeating this procedure just before a measurement. If the procedure is cancelled part way through, any results are discarded and the previous Edge Zero calibration data is maintained. Similar to Face-up Calibration, this procedure should be performed on a very flat surface, but the surface does not have to be accurately horizontal. Also, this absolute zeroing of the device is not required, and does not effect, applications where the relative User Zero is used.

INFO

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Tapping the "Info" button, at the top right of the display, toggles the display of the information presented in this dialog.