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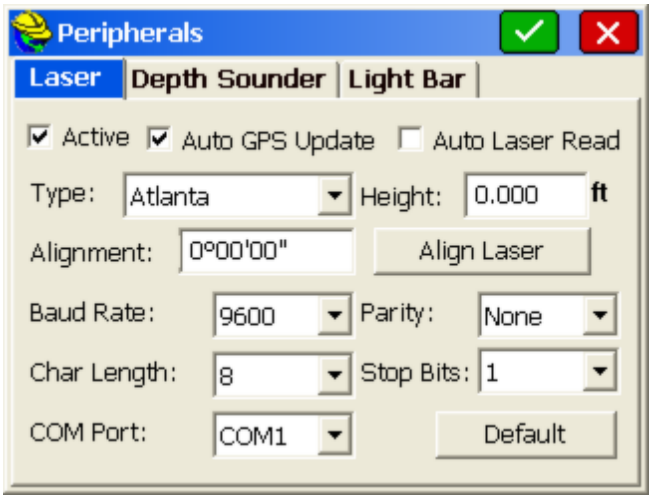
The Use of Laser Distance Measurers with SurvCE

Currently supported lasers are Laser Atlanta, Leica Disto, Laser Impulse IP200, Laser Impulse CR400, and Sokkia Contour. If you have a different laser, contact Carlson Software to discuss adding support for it. With GPS enabled, a laser can be used to provide an offset from a GPS reading. For more information, see the *GPS Offset* section of the manual. With a robotic total station enabled, a laser can be used to automatically measure the rod height of each total station reading.



To activate a laser for use with GPS, follow these steps:

1. Plug in your laser to any of your device's COM ports; make sure that it is adequately charged, and turn it on.
2. Enter the **Peripherals** menu, and select the LASER tab, as shown above.
3. Check Active
4. Select the type of laser you are using.
5. Enter the height of your laser from the ground. This value will be added to the vertical offset returned by your laser. For accuracy, this value should be specified with respect to the same ground elevation that your GPS rod height was specified.
6. Directions for aligning your laser will be given in a different section. For now, leave the laser alignment value set to 0.
7. If you want GPS to be automatically updated between each laser read, enable **Auto GPS Update**. If you want the **Read Laser** button to automatically trigger the laser, enable **Auto Laser Read**.

8. Set appropriate COM port settings. To load the default settings for the laser you specified, select the **Default** button. However, you will still need to set your COM port number manually.
9. Click **OK** to save settings, or **Cancel** to revert back to your old settings.

Activating a laser for use with a robotic total station follows a similar procedure. Attach the laser to the prism, pointing towards the ground. Every total station read will automatically trigger the laser, and the read value will be used as the rod height.

Using the Laser

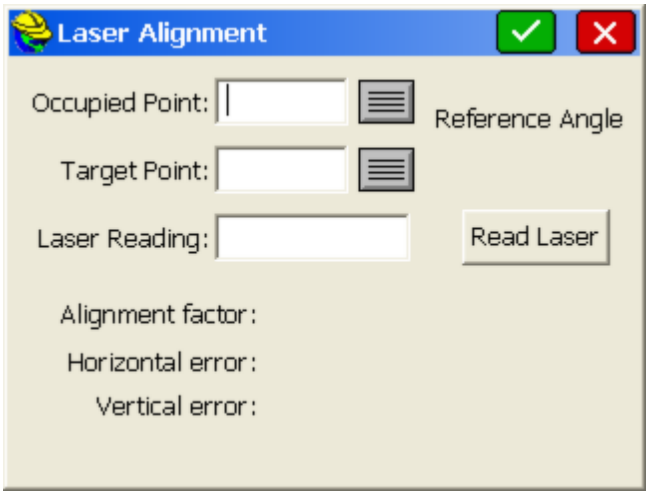
1. Once the laser has been properly set up, enter the GPS Offset method and press **Read Laser**.

2. A progress window should pop up, indicating that Carlson SurvCE is ready to read from the laser. Aim the laser and fire at a target point. Keep firing until your laser returns a valid reading, and the progress window disappears.
3. To test whether your shot was successful, verify that the values on your screen correspond to the values on your laser's internal display. Note that not all lasers return azimuth and vertical offset data, in which case this information will have to be entered manually.

Laser Alignment

This option is only relevant to lasers with internal compasses. The purpose of this option is to allow you to compensate for any discrepancy between the laser's internal compass and the North determined by GPS. The alignment factor will be automatically added to all azimuth values returned by the laser. The alignment factor can either be entered manually, or calculated using the laser and GPS. To calculate this factor using the laser, follow these steps:

1. If you don't already have two known points in your vicinity, use GPS to store two points within 50 feet of each other.
2. From the LASER tab of the Peripherals window, select **Align Laser**.



3. Choose an Occupied Point from your point list, and prepare to fire your laser from that point.
4. Choose a Target Point from your point list, and prepare to fire your laser at that point.
5. Click **Read Laser**, and when the "Reading Laser" progress bar appears, fire your laser at the target point from your occupied point. An azimuth reading will appear in the Laser Reading box, and two values will be calculated. The Reference Angle is the azimuth of the vector from the occupied point to the target point. The Alignment Factor is the difference between the azimuth read by the laser and the Reference Angle.
6. Press **OK**, and the Alignment Factor that was calculated will appear in the Laser Alignment box.
7. Click **OK** again to save the new alignment settings.

Laser-Specific Configurations

If you're having trouble establishing communication with the laser, you may need to change certain settings on your laser's instrument panel. Here are laser-specific setup instructions for some of the lasers supported by SurvCE.

- **Laser Atlanta:** Make sure your Laser Atlanta baud-rate and message formats agree with those you specified in SurvCE. Also, make sure the laser format is set to **Laser Atlanta Original** (LA1KA). Consult your Laser Atlanta manual for instructions on how to do this.

- **Laser Impulse:** Make sure your Laser Impulse baud-rate and message formats agree with those you specified in SurvCE. Supported formats are IP200, and CR400. Consult your Laser Impulse manual for instructions on how to do this.

- **Leica Disto:** Make sure your Leica Disto's baud-rate agrees with those you specified in SurvCE. Consult your Laser Impulse manual for instructions.

- **Sokkia Contour:** Make sure your Sokkia Contour's baud-rate agrees with those specified in SurvCE. Consult your Sokkia Contour manual for instructions.

- **MDL LaserAce:** Using SurvCE 1.50.008 (or higher), you can use the LaserAce, but should configure your peripherals screen to Impulse (CR400). Using the MDL selection will invert the inclination. Use 9600 baud rate. Use a Topcon/Sokkia data cable (*not a Nikon cable*!). The laser must be configured to the same units as the job since SurvCE does not convert the measurement.