



# Landing Aid

DATE: February 7, 2017  
Part Number: EAN-LandingAid

## Summary

This document describes how to configure the SightLine Applications Patent Pending Landing Aid detection capability.

## Configure Lens

### *Print a Landing Aid Target*

Open and print <http://sightlineapplications.com/docs/LandingAid2x4x2.pdf>

Scale changes are fine as long as the aspect ratio is maintained. Printing to 8½ x 11 paper will result in a target that matches the default size for the Landing Aid detection tool.

### *Connect to Target Hardware*

Assume all hardware is correctly and safely connected:

1. Start SLA-PANEL-PLUS on the PC
2. Select name of SLA target hardware from the pull-down list and click to connect
3. Confirm the firmware version is 2.22 or greater and the Landing feature is enabled.

## Enable Landing Aid

1. SLA-PANEL-PLUS → Tracking Tab → Landing sub-tab
  - Landing: Check “Enable Landing Aid Detect”
  - Landing: Check “Show Landing Overlay”

The screenshot displays the SLA-PANEL-PLUS interface with the Landing sub-tab selected. The configuration panel includes the following settings:

- Camera HFOV (deg): 50.0
- Black Target Size: 0.175
- White Target Size: 0.00874
- Minimum Confidence: 50
- Keep Out Range: 0.001
- Enable Landing Aid Detect
- Show Landing Overlay
- Enable Keep Out Zone
- Show Keep Out Overlay

Buttons: Send, Request, Advanced

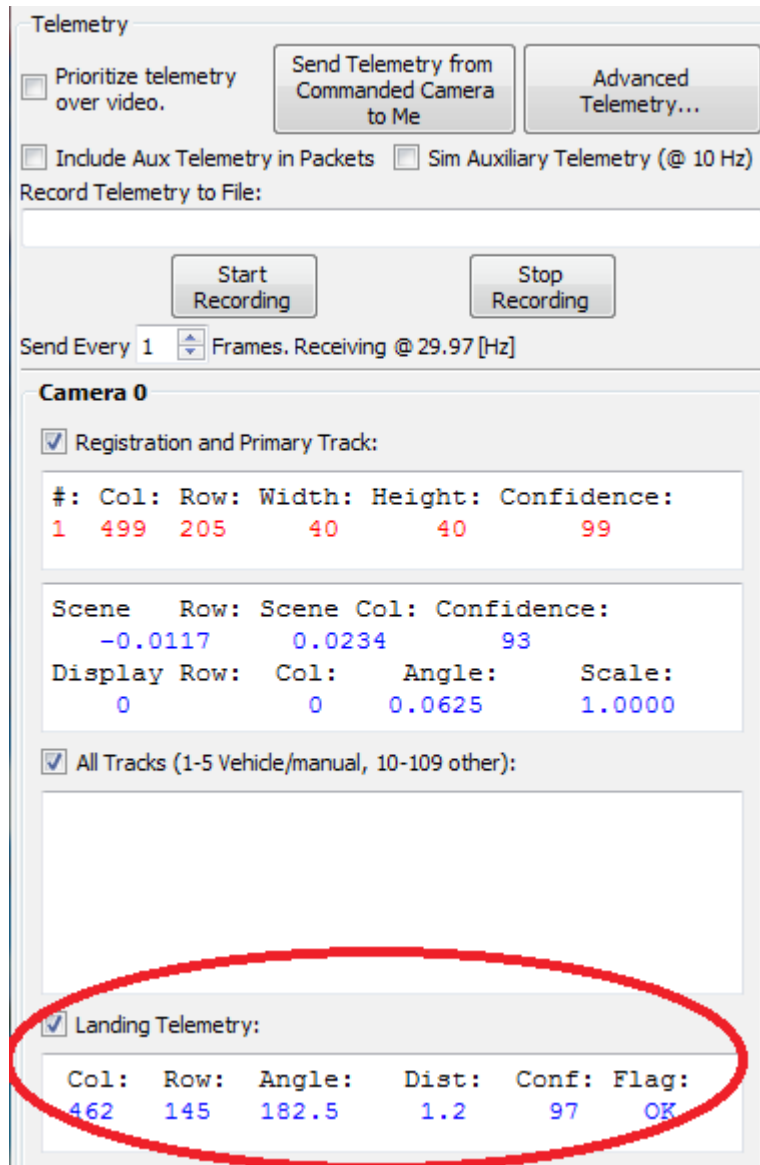
By Index: 1, 2, 3, 4, 5, 11, 12, 13, 14, 15

Acquisition Assist:  Acquisition Assist,  Intelligent Assist, Reinitialize Primary

Vertical toolbar: Connect, Compression, Video, Tracking, Record, Multi Camera, Comms, Overlays

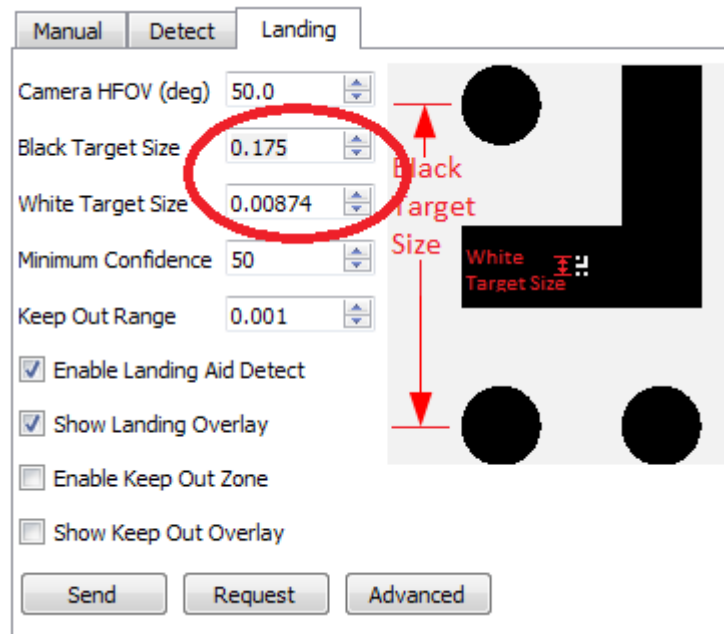
## Enable Telemetry

1. SLA-PANEL-PLUS → Tracking Tab → Landing sub-tab
  - Landing: Press “Show Telemetry”
  - Telemetry: Check “Landing Position”
  - Verify that you see a cross centered on the landing aid and that the coordinates and score show up in the landing telemetry box.



## Measure Landing Aid

1. Measure the vertical distance from center to center of the two black dots in the printed target.
  - Use whatever units you wish the result distance to come out in. For example, the default value is 0.175 meters (17.5cm). The distance to target result will be in meters.
  - If you print the target provided by SightLine to 8½ x 11 paper the “Black Target Size” should be 0.175 meters.
2. Enter that value as the “Black Target Size (height)”
3. Enter the “White Target Size (height)”
  - If you are using the target provided by SightLine, the “White Target Size (height)” is 5% of the “Black Target Size (height)”.



The screenshot shows the 'Landing' configuration tab with the following settings:

- Camera HFOV (deg): 50.0
- Black Target Size: 0.175 (circled in red)
- White Target Size: 0.00874
- Minimum Confidence: 50
- Keep Out Range: 0.001
- Enable Landing Aid Detect
- Show Landing Overlay
- Enable Keep Out Zone
- Show Keep Out Overlay

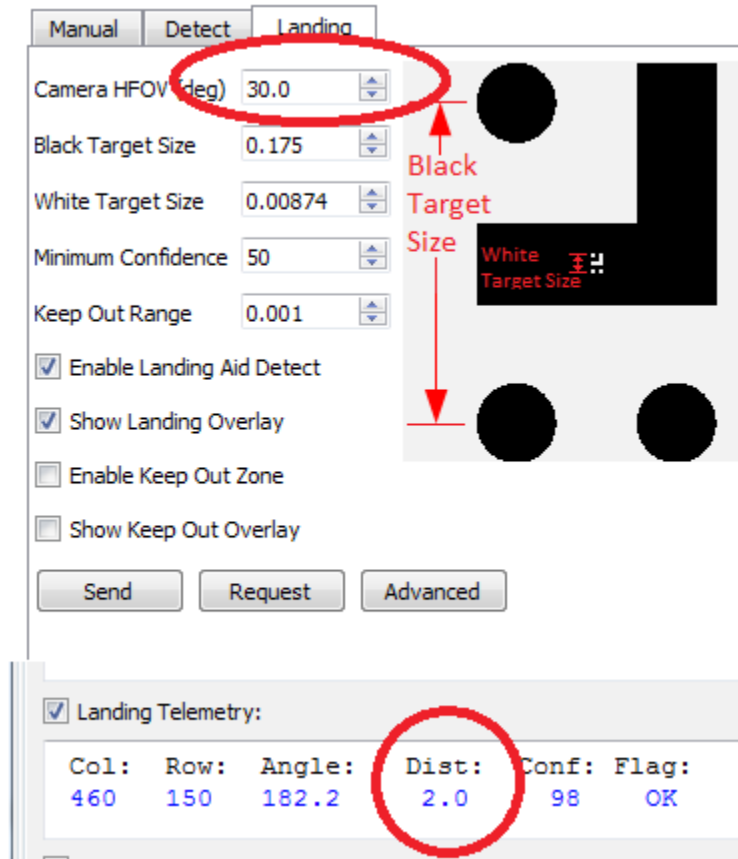
Buttons at the bottom: Send, Request, Advanced.

The diagram on the right illustrates the target layout. It shows two black dots at the top and two black dots at the bottom. A red double-headed arrow indicates the vertical distance between the centers of the two top black dots, labeled 'Black Target Size'. Another red double-headed arrow indicates the vertical distance between the center of the top black dots and the center of the white target, labeled 'White Target Size'.

## Set Camera Horizontal Field of View

This can be accomplished in one of two ways.

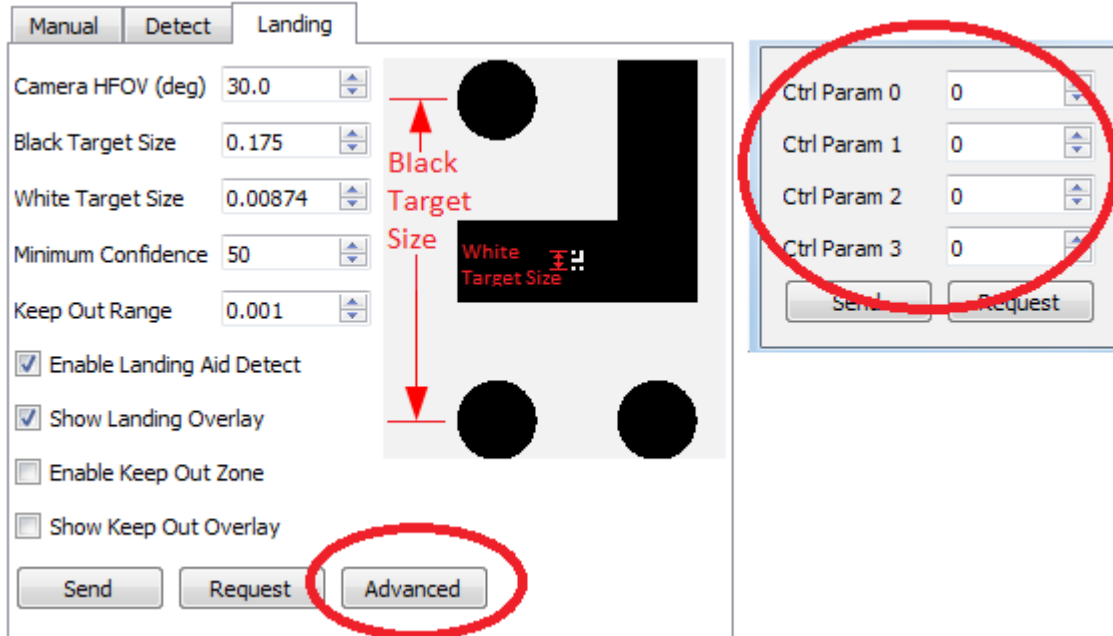
1. Calculate the camera's field of view from known camera and lens parameters.
2. Calibrate by measuring the distance between the camera and the target then adjusting the "Camera Horizontal FOV" until the distance shown in the Telemetry matches your measurement.



## Control Parameters

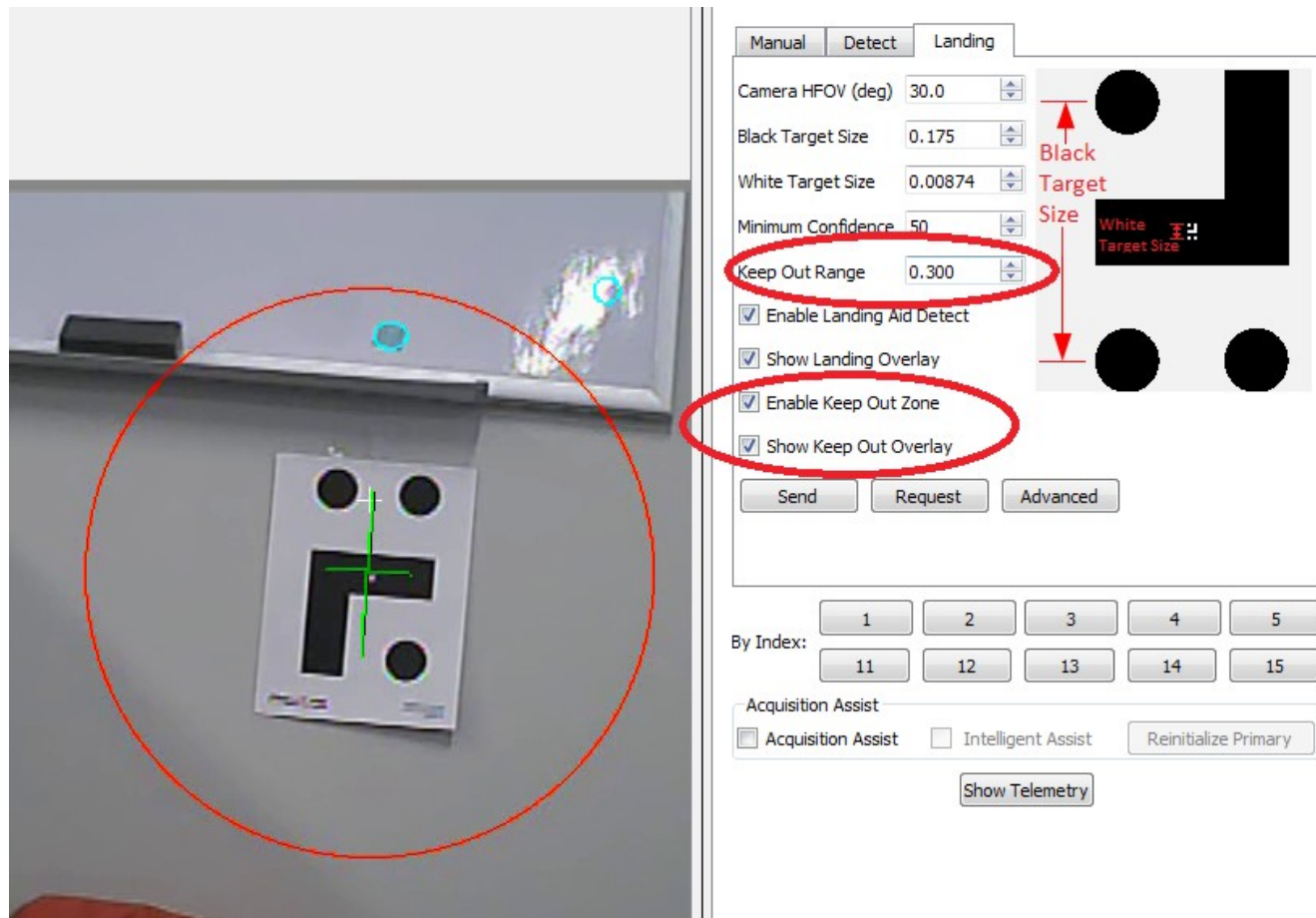
Four generic control parameters are available that will be included with the Landing Position (0x83) telemetry packet. In the ARM example application these parameters are used to set the PID gains in the landing controller.

These parameters are 16-bit unsigned integers in the interface, any scaling or conversion is left up to the end user of the Landing Position packet.



**Enable Keep Out Zone**

1. SLA-PANEL-PLUS → Tracking Tab → Landing sub-tab
  - Landing: Check “Enable Landing Aid Detect”
  - Landing: Check “Show Landing Overlay”
  - Landing: Set “Keep Out Range”. Units are the same as those used in setting up the target size.
  
2. SLA-PANEL-PLUS → Tracking Tab → Detect sub-tab
  - Detect:: Enable detection algorithm. For more information see the “EAN-DetectionModesGuide”.
  - Verify keep out region is green when no detections are inside the circle and red otherwise. NOTE: In certain detection modes the landing pad itself will cause detections. In this case these should be filtered out and not change the end detection state.
  - Additional information about the detections is available in the Landing Positions (0x83) packet.





## Contacts

<http://sightlineapplications.com/company/contact-us/>

## Files

Additional documentation, software, 3D models, schematics, Gerbers, etc. are available through our web site. Contact your Sales Engineer for more information.

<http://sightlineapplications.com/support/>

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