
Freespace® In-Air Pointing and Motion Control Devices

The Scoop remotes are second-generation in-air mouse devices with 6-axis motion control that interface wirelessly to any PC, Mac®, or USB HID compatible device through a USB dongle. They allow users to operate browsers, play games, run presentations, and control other applications with simple hand motions on a variety of connected devices.

The Scoop is an OEM reference design for companies that need a complete off-the-shelf device for their product or customers and is available **in two models, the *Scoop Pointer Remote* and the *Scoop Wireless Presenter***. The Scoop models are available with custom branding (set up charge and minimum order quantity required).

- The ***Scoop Pointer Remote*** is designed for connected set top boxes, Blu-ray players, SmartTVs, and PCs. It provides consumers with precise cursor and gesture-based control over TV applications in comfort from the couch.
- The ***Scoop Wireless Presenter*** includes precise cursor control for PC applications and adds a laser highlighter for making presentations in educational and business settings.



The device computes calibrated linear acceleration, angular velocity, and angular position in three dimensions to enable a full feature set of gesture-based controls by tilting, flicking or rotating the device. Enabled by the Freespace Smart TV MotionEngine™, it also functionally demonstrates the efficiency and scalability of pointing as a navigation paradigm. Users can simply point and click at icons to navigate vast quantities of content.

The Scoop remote controls work with any device that has a USB port that supports Human Interface Device (HID) messages or mouse events. The Scoop uses RF to communicate with its USB host antenna. A reference design for the antenna is also available for products designed with an embedded RF receiver. The RF protocol is frequency-agile and provides reliable communication between the Scoop and host without interference among users in the same frequency band.

The Scoop can be used as a tool for developing pointer-enabled or motion-enabled software. Developers can access the HID messages sent to the host to create Freespace-enabled applications without learning motion-processing algorithms. Lower level access to the motion data is available through the Hillcrest Labs [libfreespace](#) library. For the developer, the Scoop is as easy to use as a mouse, game controller, or keyboard substitute.

Key Features

The core technology for the Scoop™ devices is called Smart TV MotionEngine™. This is Hillcrest's implementation of its unique orientation-free motion control technology called Freespace®. This technology provides the user with a much greater sense of User Control than competitors. Features of Smart TV MotionEngine are:

High Accuracy

Unrivaled in-air pointing accuracy allows increased density of on-screen targets, increases target acquisition speed, and produces fewer pointing errors than competing in-air pointers and optical devices do.

Low Latency

Sophisticated motion algorithms and RF technology minimize latency between user motion and cursor motion, resulting in smooth and accurate pointing and reduced fatigue.

Advanced Motion Recognition

MotionEngine detects linear acceleration and angular velocity in three dimensions. This allows the device to recognize gestures based upon tilting, flicking or rotating the device. The Scoop also supports Hillcrest's Virtual Controls and Gesture Recognition libraries enabling advanced user interface paradigms such as motion-based dials and knobs, glyph and character recognition, and user created gestures.

Orientation Compensation

Hillcrest's patented solution lets users hold the Scoop in any orientation and consistently generate intended cursor movement.

Standard Interface

MotionEngine provides a standards-based interface to all individual motion readings so developers can incorporate precise motion data into any application that can accept HID messages.

Tremor Cancellation

MotionEngine technology enables single-pixel precision by removing more than 70% of human tremor without increased latency.

Power Management

Sensor usage is managed to ensure long battery life and intuitive operation.



Scoop Wireless Presenter
& USB Dongle

General Specifications	Value
Dimensions (length x width x height)	4.5" x 1.52" x 1.35" 114 x 37 x 34 mm
Weight	41 grams
Operating Temperature Range	5°C to 50°C
Storage Temperature Range	-30°C to 70°C
RF Range	30m (open field)
RF Frequency	2.4 GHz ISM
Laser	Class 2 (below 1 mW)
Laser Color	650 nm (red)
Battery	AAA x2
Buttons	8 buttons + scroll
Compatible Interface	USB 1.1, USB 2.0
Certification	FCC, IC, CE, FDA, KC
Performance Specifications	Value
Overall	
Update Rate	125 Hz
Bandwidth (-3 dB point)	40 Hz
Pointer	
Sensitivity	35 mickeys / °
Biased Angle Error	< 2° typical
Unbiased Angle Error	< 1° typical
Ripple	1 mickey typical
Hysteresis (>12°/s motion)	3%
Drift	< 100 mickeys / hr
Tremor Cancellation	70%
Linear Acceleration	
Range	± 2 g
Bias (zero-g offset)	< 100 mg
Sensitivity Accuracy	2%
Non-linearity (% full-scale)	3%
Resolution	< 5 mg
Angular Velocity	
Range	± 2000 °/s
Bias (zero-rate offset)	< 0.5 °/s
Sensitivity Accuracy	3%
Non-linearity (% full-scale)	1%
Resolution	0.5 °/s
Angular Position	
Range	Any orientation
Bias	< 5°
Resolution	< 0.3°

What's Included

- Scoop™ Reference Kit remote control
- One paired USB RF transceiver (antenna)
- Two AAA batteries

Evaluation Tools

- The Freespace® MotionStudio™ is a free PC application that provides a graphical interface for evaluating Freespace functionality, configuring the Scoop remote control, and developing products with Freespace motion technology. Visit <http://www.hillcrestlabs.com> Products section for more information.

- libfreespace is an open source library that provides an easy-to-use interface to Freespace devices. It lets applications use the calibrated acceleration, rotational velocity, and sensor orientation measurements that are not reported by default. Visit <http://libfreespace.hillcrestlabs.com/> for more information.

Additional Information

Product information, white papers, and tools are available at <http://www.hillcrestlabs.com>

Ordering Information

Scoop Pointer Remote Part # HL2501
Scoop Wireless Presenter Part # HL2502
Request information on custom branded options

Web: <http://www.hillcrestlabs.com>

Visit the Hillcrest Store.

Email: sales@hillcrestlabs.com

Patent Protection

Hillcrest Labs has a worldwide portfolio of more than 200 patents and patents pending, including foundational patents for Freespace® motion technology.



Hillcrest Laboratories (a.k.a. Hillcrest Labs) creates natural motion technology and software applications that enable unique, interactive digital media experiences for TVs and other digital media devices. Hillcrest Labs sells and licenses its in-air pointing and motion control technology, called Freespace®, to consumer electronics manufacturers and service providers for use in a wide range of consumer devices, including remote controls and game controllers for Smart TVs, streaming media players, Blu-ray players, set-top boxes, PCs, and tablets. Companies that have licensed Hillcrest Labs' technology for use in their products include Eastman Kodak, LG Electronics, Logitech, Roku, SMK, Sony Computer Entertainment Inc., Universal Electronics (UEI), and others. For consumers, Hillcrest Labs also offers the Kylo® browser, a free Web browser for TV. Hillcrest Labs has received numerous awards and recognitions, including the prestigious CES Innovations Honoree Award on three separate occasions, PC World's 100 Best Products and Greatest Tech Designs, Popular Mechanics' Editors Choice, ECN's Reader's Choice Tech. For additional information, visit <http://www.hillcrestlabs.com>.

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