

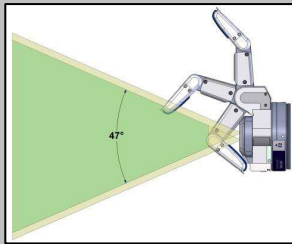


Barrett Technology® Inc.

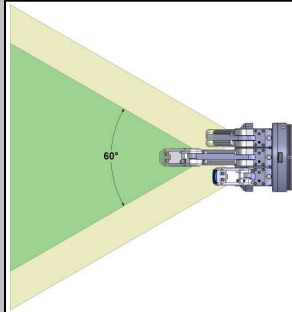
<http://www.barrett.com>

PRELIMINARY DATA SHEET

Why limit your perception options to the base of your manipulator when you can enjoy a full suite of 3D sensors in the palm of your BarrettHand?



47° Vertical Field-Of-View



60° Horizontal Field-Of-View



Perception Palm

**Dual Cameras
Laser Projector
Infrared Rangefinder
Active Light Source**

BENEFITS

- Simultaneous Localization and Mapping (SLAM) may benefit from higher feature confidence levels by adding the ability to track specific features from multiple angles when the BarrettHand is mounted on a multi-DOF robotic arm.
- Visual Servoing can be improved by maximizing the number of images taken from glare-free viewing angles. This becomes much easier when the cameras themselves are mounted at the end of a multi-DOF robotic arm.
- The Perception Palm provides the ability to look around corners and objects without moving the entire robot base.
- The Perception Palm opens up new opportunities for continuous localization and error correction during path planning.
- Retrofittable on existing BH8-280 and BH8-282 model BarrettHands.

Sensing Options that Make Sense

Barrett's Perception Palm contains two CMOS video cameras, a laser-projector, an infrared rangefinder, and an illumination LED all within a high-impact polyurethane resin housing that is mounted directly on the palm of a BarrettHand!

The Perception Palm augments the contact-based localization sensors already available on the BarrettHand (6-axis force/torque sensor, fingertip torque sensors, and tactile sensing) with several non-contact sensors to provide valuable localization information in the critical time just before manipulation, but after base-mounted sensors may have become occluded by the manipulator itself. Gorilla Glass is used for sensor and emitter lenses, providing impact and scratch resistance, and making it perfectly safe to manipulate objects up against the surface of the palm.

The Cameras

The Perception Palm offers uncompressed streaming video from dual cameras at a resolution of 320x240 (16 bits per pixel) at 30 frames per second. If you prefer to take snapshots, each camera's native resolution is 1600x1200. With a minimum focal distance of just 6 cm, you can obtain high-resolution image data up close to your manipulation target. At this distance, you can identify surface textures, colors, and materials more accurately.

The Laser Projector

When used in conjunction with the camera data, you can generate highly-accurate depth information based on the deformation of the structured light emitted by the laser projector. This helps with object segmentation and leads to more accurate mapping of the local scene.

The Infrared Rangefinder

The IR rangefinder has a 4-50 cm range, so it is ideal for non-contact localization when approaching a manipulation surface such as a table or floor.

The White Illumination LED

This controllable, locally-integrated light source helps to cast out shadows caused by manipulator interference between an overhead or base-mounted light source and the manipulation target. Dexterous illumination can help the robot see into areas of the workspace that are insufficiently lit by other means.

Simple USB

All of the Perception Palm sensors operate over a single USB 2.0 connection. USB offers familiarity, ease-of-use, cross-platform compatibility, quick-disconnect, and hot-plug capability.

SPECIFICATIONS

Connection Type	USB	2.0
Video Bandwidth	Isochronous	23.4 MB/s
Cameras	CMOS	2 MP
Power Requirements	IR	30 mA
	Each Camera	125 mA
	Laser	30 mA
	LED	30 mA
Sensor package	Height	9 mm
Infrared Sensor	Range	4-50 cm
Bus length	Max	5 m
	Min	0 °C
Operating temperature	Min	0 °C
	Max	85 °C

TECHNICAL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE
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