Solution Overview

- Ultra Compact Design (54 x 25 x 11 mm)
- Acquire Stereo Frames at (0.1-3000+ FPS)
- Hi-Speed USB 2.0 Interface (480Mb/s)
- Standard Interfaces, Lenses & Mounting
- Available Board Level/Reference Designs
- Board Level Strobe Trigger Signal
- Modular/Extendable Design
- Software API/SDK & Drivers

Embeddable stereo imaging for high performance 3D sensing.

Code Laboratories introduces a new series of machine vision cameras, utilizing low latency and low noise CMOS sensors and hardware synchronization. With a wide range of accessories and customizable illumination, lens, mounts and more the DUO offers a unique and powerful solution for researchers and integrators.

Using high-speed USB 2.0 bus protocol and offering a fully configurable capture, digitization and processing of monochrome video signals, these cameras are designed for real-time uncompressed stereo video streaming and digital still image acquisition while maintaining resolution and high frame rates.

This document will outline the specifications of the **DUO mini** solution. Featuring an ultra-compact design and low level sensor access in an extremely lightweight solution (around 25 grams). The ultra small form factor provides more versatility in space restricted applications.

With a standard USB 2.0 interface, Micro USB connector and modular components to allow for use in real-time/high demand applications. The camera supports both M8 and M12 Lens Mounts for flexible use with a wide range of standard industrial micro lenses.

The software provides thorough documentation and low level access to sensor data making it easy to integrate into existing and embedded systems. With a robust C API and SDK examples, common languages/frameworks such as C/C++, C#, Python and more are supported.

The cameras offers fine grain control over all aspects of device usage and is highly optimized for real-time scenarios. Target areas of application are machine vision, human computer interaction, automotive, robotics, microscopy inspection, military, medical, navigation and related fields.

Specification	Model: CL-DUO-MINI-LV1
Stereo Frames	Configurable Binning/Windowing: 56 FPS @ 752x480 62 FPS @ 640x480 123 FPS @ 640x240 240 FPS @ 640x120 93 FPS @ 320x480 184 FPS @ 320x240 360 FPS @ 320x120 Variable Framerates: 0.1-3000+ FPS
Pixel Size	6.0 x 6.0μm
Baseline	30.0mm
Colormode/Filters	Monochrome/No Filters
Focal Lengths	2.0mm - 2.1mm - Infinity 2.2mm - Back 3.1mm
Field of View	170° Wide Angle Lens with Low Distortion < 3%
Lens Type	M8 x P0.5 - Compact Microlens (Supports M8/M12)
Interfaces	1 x USB 2.0 Interface (Micro USB)
Power Consumption	~0.5 Watt @ +5V DC from USB
Illumination	Available on DUO-MINILX-LV1
Transfer Rate	Hi-Speed 480 Mbps
Control Functions	Exposure/Shutter/Brightness
Scanning Modes	Progressive Scan/Global Shutter
S/N Ratio	> 54dB Linear
External Triggers	N/A
Supplied Accessories	Lens Covers, Drivers/SDK, Micro USB cable
Temperatures	Operations: -5 to50° C Storage: -20 to 60° C
Shutter Speed	0.3 μsec ~ 10 sec
Integrated Sensors	Available on DUO-MINILX-LV1
Dimensions/Weight	52 x 25.4 x 11mm @ 25 grams approx.
Available Accessories	TBA (Q2 2014)

DUO API/SDK & Vision Engine

Software Overview

- High Performance & Modular Imaging Pipeline
- Dense 3D Mapping/Reconstruction
- Feature Based Tracking/Processing
- Highly Optimized Algorithms (AMX/SSE)
- Direct Memory Access Driver/Interface
- Standard C API with Language/Framework Bindings
- Compatible with C++, C#, Python, MATLAB and more.
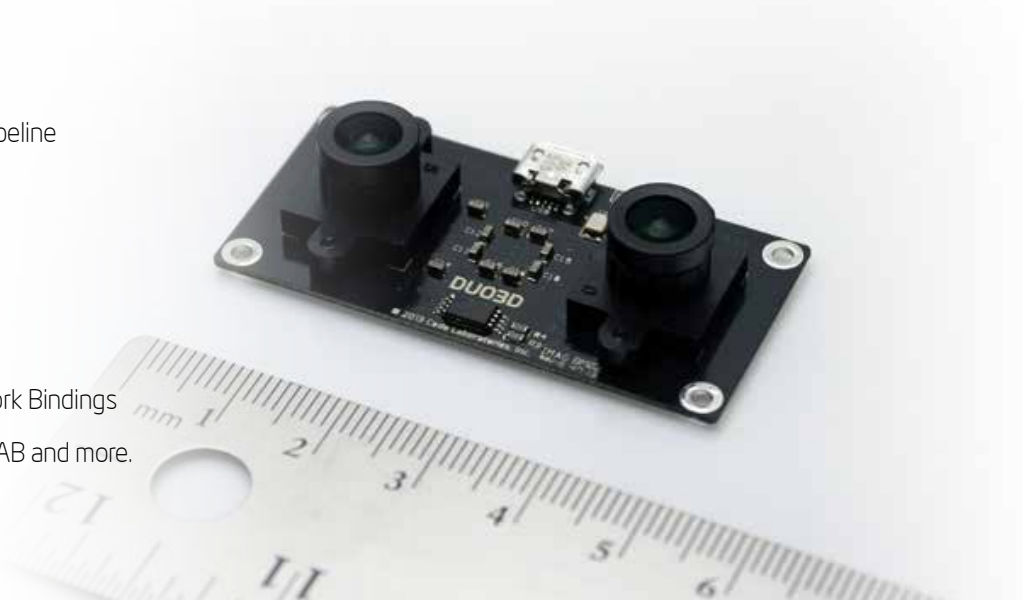
Sensor Access & Control

The **DUO API** provides low level access and control of the device and related sensors. Whether running in standalone or in an array the API allows for precise manipulation of common parameters such as acquisition rates and illumination methods. This is a requirement for developing fully custom machine vision applications.

Applications & Algorithms

The **DUO SDK** provides high level applications and algorithms for working with modern stereo vision systems. With applications ranging from standard matching examples, dense 3D reconstruction, hand and face tracking and more we aim to give developers a head start by providing highly optimized production quality solutions.

Requirements

- Modern Processor
  Intel i5/i7 or comparable AMD
- Minimum 4GB System Memory
- Linux, Mac or Windows OS
- Micro USB 2.0 Hi-Speed Cable
- Internet Connection for Updates
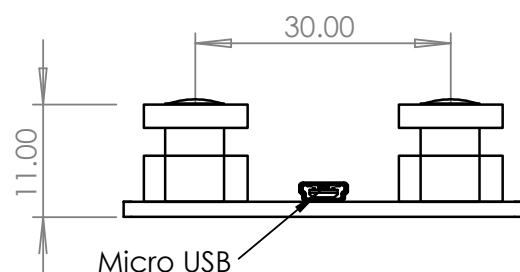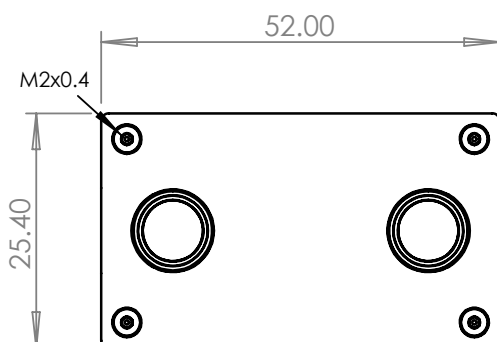
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