

CDK Overview

- THine's CDK allows camera system developers to fine tune THine's THP7312 Image Signal Processor (ISP) firmware in house according to their image requirements
- CDK shortens the image tuning time and reduces the workload to develop camera systems
- CDK allows designers to select virtually any image sensor up to 16M Pixels to be used with THine's THP7312 ISP
- CDK consists of 3 major components:
 1. SDK (Software Dev Kit) - is a set of source codes and binary libraries of THP7312's firmware for a Reference Camera Module
 2. 3T (THine Tuning Tool) - is a GUI based easy to use Camera System development tool that can change parameters inside the THP7312 firmware to tune the firmware for a desired Camera Module
 3. EVB (Evaluation Board) - 3T & EVB can help check the tuning results. Developers can connect their own Camera Module on the EVB Header Board

3 Major CDK Components

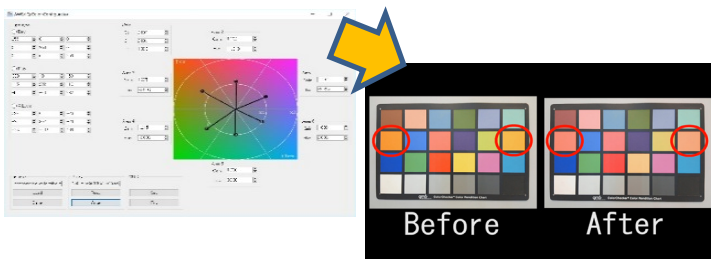
Software Development Kit (SDK)

SDK consists of :

- Sample firmware source code
- Firmware binary library including Internal hardware drivers
- External hardware driver templates

THine Tuning Tools (3T)

- GUI based tuning tool for THine's ISP firmware
- Generates tuned firmware in source or binary format
- Directly modifies the ISP's registers
- A GUI Tool Example of a Color Configurator:



SDK : Software Development Kit

ISP Firmware

Source code (.c)

Object code (.a)

Header file (.h)

Parameter

3T : THine Tuning Tool

Console

THU Win

Debugger Conn.

Viewer

USB CamViewer

Configurator

AE

AWB/IQ

Color effect

Flash ROM

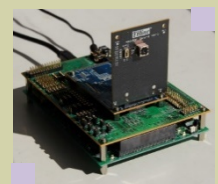
Drv mode

IO

Shading

EVB : Evaluation Board

Header Board
ISP Board
Base Board
Grabber Board



Evaluation Board(EVB)

- The EVB has a header board (including reference camera module), an ISP (THP7312) board, a base board and a frame grabber board

Features

Basic

- Frame Size Up to 16M pixel
- Frame Rate 16fps@16M pixel, 20fps@13M pixel, 30fps@4K2K, 120fps@1080p, 240fps@720p etc.
- Pixel Rate 300M pixel/sec

Interface

- Sensor MIPI CSI-2 up to 4lane 1G bps/lane RAW12/10bit
LVCMOS Parallel RAW12/10
- Host MIPI CSI-2 up to 4lane 1G bps/lane YUV420/422 or JPEG
LVCMOS Parallel YUV422 or JPEG

Functions

• Sensor Correction

- Black Level Correction
- Adaptive Correction of Defect/Dust Pixels
- Lens Shading Correction
- De-mosaic
- Support Alternate Row HDR
- Support RGB-IR

• Adaptive Image Signal Processing

- Noise Reduction
- Edge Enhancement
- Multi Axis Color Correction
- Gamma Correction

• Auto Functions

- Auto Exposure (Multi Point)
- Auto Focus (Multi Point, Continuous)
- Auto White Balance
- Auto Flicker Cancel

- Auto Strobe Light Dimmer
- Auto Scene Detection
- Auto Fog Detection

• Other

- Face Detection
- Movie Image Anti Shaking (EIS)
- De-fog
- Dual PLL
- JPEG
- Digital Zoom (Super Resolution)
- Resize x3 (MIPI Virtual channel)
- Horizontal Mirror
- Special Effects
Monochrome, Sepia, Reverse, etc.
- Peripheral Control
- VCM, Mechanical Shutter, Zoom Lenses
- LED Flash

Items Required (Not included in the Kit)

- IDE CodeWarrior Special Edition
<https://www.nxp.com/>
- Debug Probe MULTILINK Universal
<http://www.pemicro.com/>
- USB3.0 Cable Type-A to Type-B