

## READ ME for KL400 Firmware Update v.10

This zip file contains three files needed to successfully update your Kepler camera.

The first file is instructions on how to use the Kepler Camera Firmware Updater software to load new firmware files onto your Kepler camera hardware. If your camera already has loaded on it a later revision of firmware there is no need to load one or both older firmware versions.

The second file has a .mcs extension. This file is the Kepler camera FPGA firmware which should be loaded with the Kepler Camera Firmware Updater software.

The third file has a .img file extension. This file is the Kepler camera processor firmware that interfaces to the API and which should be loaded with the Kepler Camera Firmware Updater software.

NOTE: Revision x10 increases the size of the metadata header which prepends the image data.

This could potentially impact customer developed software since this will result in a change in each image's file size and the offset to the first pixel value. The metadata header has always included a metadata header size in bytes, so most customer developed software should accommodate the change in metadata size. However, the added 138 bytes of metadata may impact customer custom interfaces due to the 138 of extra file length. Caution is advised for customers using custom created camera interfaces.

-- Revision 10 FIXES: Adds Frame\_stall and Frame\_stall\_ms capability to metadata. If an image cannot capture a frame at the desired frame to frame delay then frame stall is a flag to indicate this has occurred and frame\_stall\_ms is the value of the time delay to start the frame beyond its expected start time.

-- Moves metadata to version 3. Version 3 metadata is longer (384 bytes) and includes additional items:

metadata(1719 DOWNT0 1712) <= horz\_pixel\_size (resolution 0.1 um)

metadata(1727 DOWNT0 1720) <= vert\_pixel\_size (resolution 0.1 um)

metadata(1871 DOWNT0 1857) <= frame\_stall\_ms (resolution milliseconds)

metadata(1856) <= frame\_stall\_in (flag indicating frame exposure start was stalled)

-- Adds external trigger mode capabilities of one trigger per capture or one trigger per frame.

-- Metadata exposure time is actual rather than requested in the case of external triggering quenching an exposure early.

-- Added external illumination control capability.