Application Note:

KAI-2000 and KAI-2092 Image Sensors
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Operational Similarities

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Similarities between the KAI-2000 and KAI-2092 Image Sensors:

It is possible for the camera designer to build a camera which is capable of operating both the KAI-2000 and KAI-2092 CCD image sensors. One camera design can provide 2 megapixel images in two different formats:

Sensor	Rows	Columns	Pixel Size	Aspect Ratio
KAI-2000	1200	1600	7.4 x 7.4µm	4:3
KAI-2092	1080	1920	7.4 x 7.4µm	16:9

Both sensors have packages that will plug into the same socket. The pin functions are identical except for pin 11. Pin 11 on the KAI-2092 is a ground pin (zero volts) and pin 11 on the KAI-2000 is the input for the fast dump gate. All other pins have identical voltage and timing requirements for both sensors.

Pin 11 of the KAI-2092 must either be connected ground or left floating with no connection. Better noise performance may be obtained if pin 11 is connected to ground.

If a camera design does not require the fast dump feature of the KAI-2000, then pin 11 should be connected to –9 Volts (the vertical clock low level voltage is acceptable).

If your camera design requires the fast dump feature of the KAI-2000, then pin 11 should be clocked from –9 V to +5 V.

To design a camera capable of operating the KAI-2000 and KAI-2092, provide a jumper or some other suitable provision to change the connection on pin 11. Also, program the timing generator to allow for two different array sizes. All other voltages and timing signals to the remaining 31 pins are identical for both sensors. The capacitive loading of the KAI-2000 horizontal CCD will be 15 to 20% lower than the horizontal CCD of the KAI-2092. The capacitive loading of the KAI-2000 vertical CCD will be approximately equal to the KAI-2092. The substrate capacitances for the electronic shutter driver are approximately equal. The horizontal CCD output amplifier design is the same for both devices. The pixel designs are also the same and will provide similar quantum efficiencies, antiblooming protection, linearity, and dynamic range. The outside physical dimensions of the pins and package mounting holes are identical.

For more information, please refer to the performance specifications for these two devices.

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