OmniVision's OV16885 is a high-resolution image sensor built on OmniVision's second-generation, 1.0-micron PureCel®Plus-S pixel architecture that is well-suited for world-facing mobile cameras. The OV16885 enhances mainstream 16-megapixel resolution images and video with advanced features such as zig-zag high dynamic range (zHDR) and support for phase detection autofocus (PDAF), enabling crisp image and video details with excellent scene reproduction.

zHDR uses a long and a short exposure in a single frame to extend dynamic range capabilities of the sensors. Long and short exposure lines are diagonally interlaced across the entire pixel array in a zig-zag pattern. This enables live preview and video recording in HDR mode and single-shot full-resolution HDR images in capture mode without any shutter lag.

Leveraging OmniVision's PureCel®Plus-S stacked die technology, the OV16885 captures full-resolution 16-megapixel images and video with zHDR functionality at 30 frames per second (fps), 4K2K video at 60 fps, and 1080p at 120 fps. The OV16885 sensor fits into industry-standard module form factors for slim mobile devices.

Find out more at www.ovt.com.
Product Features
- 16MP @ 30 fps, 4K2K @ 60 fps
- supports ZigZag HDR timing
- supports phase detection auto focus (PDAF)
- supports dynamic defect pixel correction (DPC)
- automatic black level calibration (ABLC)
- total embedded one-time programmable (OTP) memory: 2048 bytes, 896 bytes for customer use, remaining bytes for internal use
- supports typical images sizes:
  - 4762 x 3504
  - 3840 x 2160
  - 2336 x 1752
  - 1920 x 1080
  - 1280 x 720
  - 800 x 480
- supports horizontal and vertical subsampling
- programmable controls for:
  - frame rate
  - mirror and flip
  - cropping
  - windowing
- up to 4-lane MIPI TX interface with speed up to 1.6 Gbps/lane
- programmable I/O drive capability
- standard serial SCCB interface
- supports output formats:
  - 10-bit RAW RGB
  - DPCM 10-B compression
- two on-chip phase lock loops (PLLs)
- built-in temperature sensor
- typical module size: 8.5 x 8.5 x 4.5 mm

Product Specifications
- active array size: 4672 x 3504
- power supply:
  - core: 1.2V
  - analog: 2.8V
  - I/O: 1.8V
- power requirements:
  - active: 300mW
  - XSHUTDOWN: 1 µW
- temperature range:
  - operating: -30°C to +85°C junction temperature
  - stable image: 0°C to +60°C junction temperature
- input clock frequency: 6 - 64 MHz
- lens size: 1/3.06"
- lens chief ray angle: 34.2° non-linear
- sensitivity: 3.2 Ke/Lux-sec
- maximum image transfer rate:
  - 4672 x 3504: 30 fps
  - 3840 x 2160: 60 fps
  - 2336 x 1752: 60 fps
  - 1920 x 1080: 120 fps
  - 1280 x 720: 2336 fps
  - 800 x 480: 240 fps
- max S/N ratio: 36.8 dB
- dynamic range: 72 dB @ 16x gain
- dark current: 4 e-/sec
- frame transfer speed: 60°C junction temperature
- scan mode: progressive
- pixel size: 1.0 µm x 1.0 µm
- image area: 4741.63 µm x 3564.29 µm
- die dimensions:
  - COB: 5690 µm x 4050 µm
  - RW: 5740 µm x 4120 µm

Functional Block Diagram

[Diagram of OV16885 image sensor core, image sensor processor, image interface, PLLs, PLL, timing generator and system control logic, SCCB interface, control register bank, XCLK, PWNB, XSHUTDOWN, VSIN, VSYNC, HREF, FREQ, STROBE, GP1[4:0], SID, SCL, SDA, MDP/N[3:0], FIFO, MIPI]