

Orbis CMOS Time Delay Integration Product Family

Imaging Sensors



High Resolution Digital Output CMOS TDI Image Sensors

Orbis are very high resolution CMOS time delay integration (TDI) image sensors with CCD on CMOS architecture designed for space satellite Earth observation (EO), planetary exploration, airborne and defense applications, providing extraordinary images. The Orbis family are high speed CMOS TDI imaging sensors with up to 16000 pixels and 4 panchromatic bands and up to 8000 pixels and 6 multispectral bands. With the high on-chip integration the devices are easy to integrate into the imager system. There are image sensor variant options for radiation tolerant and radiation hard.

Key Features

- » Very high resolution
- » CCD on CMOS architecture
- » Back thinned – back illuminated technology
- » Front side illumination options
- » High quantum efficiency
- » High signal to noise ratio
- » Half pixel shift
- » Selectable TDI Stages
- » User selectable outputs
- » Integrated multispectral filters
- » High TRL / Space qualified
- » On-chip integration / easy to integrate
- » High full well capacity
- » High speed
- » Very high ground sampling distance
- » Low power consumption
- » Radiation tolerant and radiation hard versions
- » Anti-blooming
- » Bi-directional
- » Fully digital outputs – no focal plane ADCs required
- » Small pixels and high data rates / high swathe
- » Configuration options: up to 8 multispectral and pan bands

Typical Applications

- » Earth observation
- » Remote sensing
- » Planetary exploration

Options suited to New Space applications available upon request.

Teledyne Imaging has extensive heritage in providing standard and customised image sensors for space applications. Please discuss any requirements for customised variants to meet your needs.

	2020	2021	2022	2023	2024
Orbis ⁴⁷	TRL8	TRL9	TRL9	TRL9	TRL9
Orbis ⁴⁹	TRL6	TRL7	TRL8 Planned	TRL9 Planned	TRL9 Planned
Orbis ⁵¹	TRL7	TRL8	TRL9	TRL9	TRL9
Orbis ¹²⁵	TRL5	TRL6	TRL7	TRL8 & 9	TRL9

Performance Specifications	Orbis ⁴⁷	Orbis ⁴⁹	Orbis ⁵¹	Orbis ¹²⁵
Number of pixels	P: 12288 MS: 3072	P: 12288 MS: 3072	P: 12288 MS: 3072	P: 16000 MS: 8000
Channels	P: 2 MS: 4	P: 2 MS: 4	P: 2 MS: 6	P: 4 MS: 6
Pixel size	P: 7µm MS: 28µm	P: 7µm MS: 28µm	P: 7µm MS: 14µm	P: 5µm MS: 10µm
QE @ 600nm (PAN) - typical	64%	86%	86%	90%
Full Well Capacity	P: 31k e- MS: 124k e-	P: 70k e- MS: 280k e-	P: 80k e- MS: 240k e-	P: 60k e- MS: 240k e-
Read-out speed at max. line rate	Typical: 2.0 – 2.2Gb/s via CML interface			
Power dissipation	≤ 6 W	≤ 6 W	≤ 10 W	≤ 8 W

* Datasheets available upon request

Information subject to change – values typical unless otherwise stated.

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