X-PANEL® 1412 d

CMOS X-ray flat panel detector

- Brings greater total cost savings and sets an attractive price point in its class
- Provides superior image quality even at low radiation doses
- Features high scanning speed
- Meets requirements of mainstream dental modalities, 2-in-1 detector solution
- Equipped with robust, compact, and lightweight mechanics
- Built on a well-proven and reliable platform
- Enables optimal shoulder edge distance
- Comes with optimized read-out electronics and a developer aid kit

The X-Panel 1412d is a CMOS (complementary metal oxide semiconductor) X-ray flat panel detector optimized for dental CBCT (cone beam computed tomography) and panoramic X-ray imaging applications. The use-case-driven quality of X-Panel 1412d perfectly addresses the application-specific requirements. This 2-in-1 detector solution is designed to bring greater total cost savings and imaging quality for these performance-driven, high-tier dental imaging modalities.

With its cost-saving features, the X-Panel 1412d sets an attractive price point in its class. Such features include the enhanced CMOS sensor and the simplified platform designs that improve manufacturability and streamline the supply chain. Furthermore, the platform is mature and well proven to accelerate detector integration to X-ray systems and time-to-market.

The speedy yet sharp 1412d detector solution utilizes a reliable CMOS imaging sensor (CIS) design for high scanning speed and razor sharp images, even at low-dose operation modes. It features a frame rate of up to 30 fps in full size and full resolution. In the typical ROI (region of interest) mode for

panoramic application, it is also capable of acquiring images at 300 fps.

The X-Panel 1412d has an active area of 140.1-by-120 mm, and a medical-grade, structured cesium iodide scintillator. The solution is powered by a 100-micrometer, dual range pixel and a 14-bit ADC. The detector supports both continuous and synchronous triggering modes, and is targeted for an X-ray energy range of 60-100 kVp.

The X-Panel 1412d is equipped with robust, compact, and lightweight mechanics for reliability and ease of X-ray imaging system design. The X-Panel 1412 can be easily integrated to small X-ray system form factors. In addition, the narrow frames around the active area shrink the shoulder edge distance.

The X-Panel 1412d comes with optimized read-out electronics and a Gigabit Ethernet interface. For speeding up design and system integration, a complete developer aid kit is available. The kit includes an application-programming interface (API), a panel demonstration application software, necessary cabling, and developer guides.

Key features

- Active CMOS pixel sensor (APS)
- Active area 140.1-by-120 mm
- Dual gain (LFW/HFW) 100 μm pixel
- 14-bit ADC, frame rate up to 30 fps
- Both continuous and synchronous triggering modes
- Medical-grade, structured CsI scintillator
- Programmable ROI mode
- Imaging performance
- Dynamic range up to 76 dB
- >70% @RQA5
- MTF 60%@1lp/mm / 30%@2lp/mm
- GigE data interface

Applications

- Dental cone beam computed tomography (CBCT), and panoramic imaging

Technical Specifications

Feature	Specification
X-ray energy range	60-100 kVp
Active area	140.1-by-120 mm
Pixel pitch	100 µm
Pixel matrix	1401-by-1200
Frame rate	
Full size, 14 bit, GigE	30 fps
Panoramic mode/100 pixel rows, 14 bit, GigE	300 fps
ADC	14-bit
Gain modes	2 (LFW/HFW)
ROI mode	Programmable size and location
Binning	1x1, 2x2
Trigger modes	Continuous / synchronous
Scintillator type	CsI optimized for dental
Data interface	GigE
Power supply	12 V / 24 V
Power consumption	<7W (typical @operation)
Weight	2.6 kg
Saturation dose	LFW 2 uGy, HFW 10 uGy
Dynamic range	LFW 72 dB HFW 76 dB
DQE(0)	>70% @RQA5
MTF 60%@1lp/mm	60%@1lp/mm / 30%@2lp/mm
Lag negligible	Image lag negligible

X-Panel 1412d
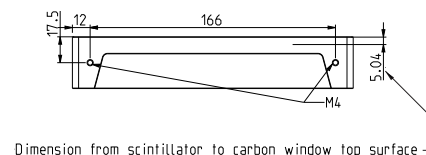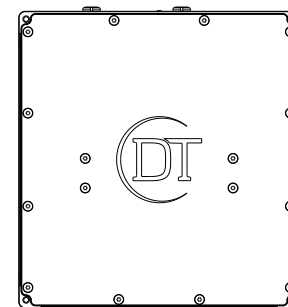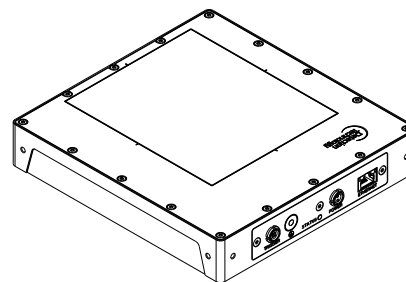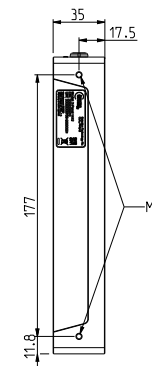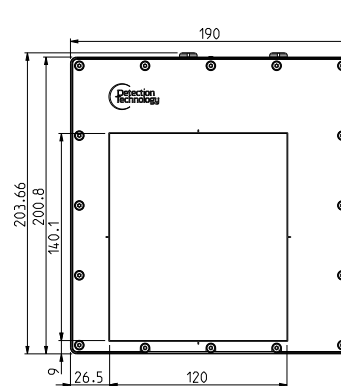
Dimension from scintillator to carbon window top surface

Detection Technology