X-PANEL® 1615c FXM

CMOS X-ray flat panel detector series

- Improves imaging performance with the largest active area in its class

- Features fast scanning speed for flicker-free live imaging for surgical needs, and ultra-high frame rate options for dental scans

- Equipped with compact, lightweight mechanics and in-built functionalities for ease of use

- Provides superior image quality, even at low radiation doses

- Optimized models for surgical and dental X-rays

- Comes with a developer aid kit and global engineering support

The X-Panel 1615c FXM is an application-optimized CMOS (complementary metal oxide semiconductor) X-ray flat panel detector series designed for surgical and dental X-ray imaging applications. The X-Panel 1615c FXM enhances both patients' and healthcare professionals' experience and safety, and eases the design of stringent medical imaging systems for shortening time-to-market and bringing total cost savings.

For greater digital imaging, the X-Panel 1615c FXM is available in two models that are optimized to application-specific requirements, and offer use-case-driven add-on features. The surgical variant, which features in-built functions for extra image stability in long fluoroscopic scans, is a perfect fit for mini C-arms systems. In turn, the dental variant comes with a capability to scan full frames at record speeds, up to 66 fps, yet the data transmission is secured through the 1000BASE-T Ethernet. This is made possible by a specific scan-to-buffer mode, which offers completely new scanning options for dental cone beam computed tomography (CBCT) and panoramic imaging.

The models have the largest active area of 161-by-150 mm in its class. This improves diagnosis by enabling full-sized and detailed images of clinically relevant anatomy to be viewed, minimizes the necessary scanning time and as a result the overall radiation dose, and streamlines workflows during surgical operations and dental treatments.

The detector models are equipped with compact, lightweight mechanics for flexibility and ease of X-ray imaging system design. The X-Panel 1615c FXM 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 in dental applications.

The X-Panel 1615c FXM utilizes a reliable CMOS imaging sensor (CIS) design that sets a new golden standard for high scanning speed and superior image quality, even with ultra-low radiation doses. The solution is powered by a 100-micrometer dual range pixel, and a programmable 14-bit ADC for fast, low noise and high-resolution analog-to-digital conversion. For improved image stability, the detector solution has a differential double sampling (DDS) functionality to remove the effects of undesired offset.

For speeding up design and the system integration, a complete developer aid kit is available. The kit includes an application-programming interface (API), demo software, necessary cabling, and developer guides.

Key features

- Active area 161-by-150 mm
- Active CMOS pixel sensor (APS)
  - Dual gain (LFW/HFW) 100um pixel
  - 14-bit ADC, frame rate up to 66 fps (@full frame and resolution, scan-to-buffer mode)
- Scan-to-buffer mode up to 500 full frames
- In-built differential double sampling (DDS) for extended scans
- Fully programmable ROI
- 1000BASE-T Ethernet
- Imaging performance
  - Dynamic range up to 76 dB
  - >70% @RQA5
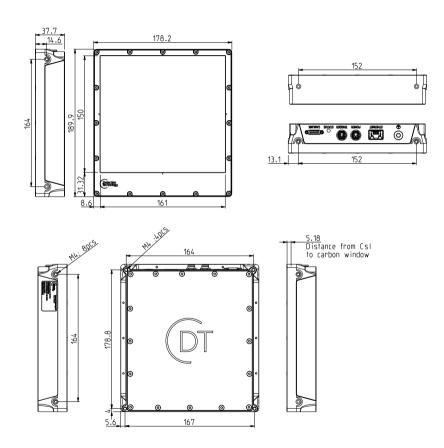 - MTF @1lp/mm>60%, @2lp/mm>30%

Applications

- Image-guided surgery, mini C-arms
- Dental cone beam computed tomography (CBCT), and panoramic imaging

Key characteristics

Feature	X-Panel 1615c FXM for surgical imaging	X-Panel 1615c FXM for dental imaging
X-ray energy range	20–80 kVp	60–100 kVp
Active area	161 x 150 mm	
Pixel pitch	100 µm	
Pixel matrix	1610 x 1500	
Frame rate		
@ROI:1610 x 1500, 14bit, GigE, scan-to-buffer	Up to 66 fps	
@ROI:1610 x 1500, 12bit, GigE	28 fps	
@ROI:1610 x 100, 12bit, GigE	350 fps	
ADC	14 bit ADC	
Gain modes	2 (LFW/HFW)	
ROI mode	Programmable size and location	
Binning	1x1, 2x2	
Scan-to-buffer mode	Not applicable	Up to 500 frames @full frame & resolution
Differential double sampling (DDS)	Available	
Trigger modes	Continuous / synchronous	
Scintillator type	CsI optimized for surgical and dental	
Data interface	1000BASE-T Ethernet	
Power supply	12 V / 24 V	
Weight	2.6 kg	
Saturation dose	LFW 2 uGy, HFW 10 uGy, @RQA5	
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 1615c FXM for surgical imaging

X-Panel 1615c FXM for dental imaging

Detection
Technology