

# SBIG® STC-428 Series

SCIENTIFIC CMOS IMAGING CAMERA



The SBIG STC-428 series are science-grade CMOS Active Pixel Sensor detectors designed for high reliability and reproducible results. Unlike a video or amateur-grade hobby camera, they feature a high-reliability design; optimal industrial-grade sensors with large 4.5µm square pixels in a 3208x2200 array; native 12-bit or StackPro 16-bit digitization; thermo-electric SmartCooling™ for heat exchange airflow; and an optional mechanical shutter or filter wheel with a dark shutter position.

It is available in three variations:

- STC-428-M Monochrome, electronic shutter
- STC-428-SH Monochrome, mechanical dark shutter
- STC-428-FW with Precision 8-position color filter wheel

The STC-428-FW has a full size filter wheel with provision for up to 8 third-party standard 36mm unmounted glass filters, or you can use the 5 included filter inserts for 1.25" threaded filters. One filter position can be used as a mechanical dark shutter.

The SBIG STC-428 scientific CMOS Active Pixel Sensor cameras represent a major improvement over CCD technology. Compared with previous CCD models such as the STF-8300M, the STC-428 features higher sensitivity (78% QE versus 56%), significantly lower read noise (2.5 e- versus 9.3 e-), and 20X faster readout.

While a single exposure on the IMX428 sensor can equal CCD dynamic range, the combination of fast readout and very low read noise allows for stacking many shorter to produce greater dynamic range than previously possible. The built-in StackPro™ capability can automatically divide your exposure into up to 16 shorter sub-exposures, and stack them inside the camera prior to download. This dramatically increases dynamic range without imposing greater disk storage and processing requirements on the host computer – with read noise equal to or lower than comparable CCD cameras. sensor temperature to within 0.1°C, and minimizes fan speed based on heat sink temperature for longer life and quieter operation.



## The SBIG STC-428 features include:

High sensitivity, low noise 7 megapixel Sony IMX428 imaging sensor	SmartCooling™ active temperature regulation to 0.1°C for high calibration stability
StackPro™ automatic in-camera sub-exposure stacking saves disk space, yields longer exposures	Compatible with SBIG StarChaser SC-4C off-axis guiding camera for accurate tracking
Downloads images sub-second (depending on computer speed) much faster than a CCD	Supports AO-8A adaptive optics unit via StarChaser SC-4C for crisp, tight stars
High-speed USB 3.0 interface or use USB 2.0 for longer cable length	MaxIm LT control software to get you running in minutes
Regulated two-stage cooling with delta T of approximately -30°C	ASCOM and DL Imaging Drivers included Royalty-free Software Development Kit available
Optional eight position filter wheel for optional 36mm unmounted or 1.25" threaded filters, with one slot configured as a dark frame shutter, no need to cover the telescope for dark frames	Electronic global shutter for fast exposure times (0.001 to 3600 s) to image bright or faint targets. Optional Mechanical Shutter for dark frames. Optional Filter Wheel dark slot

**TECHNICAL SPECIFICATIONS**

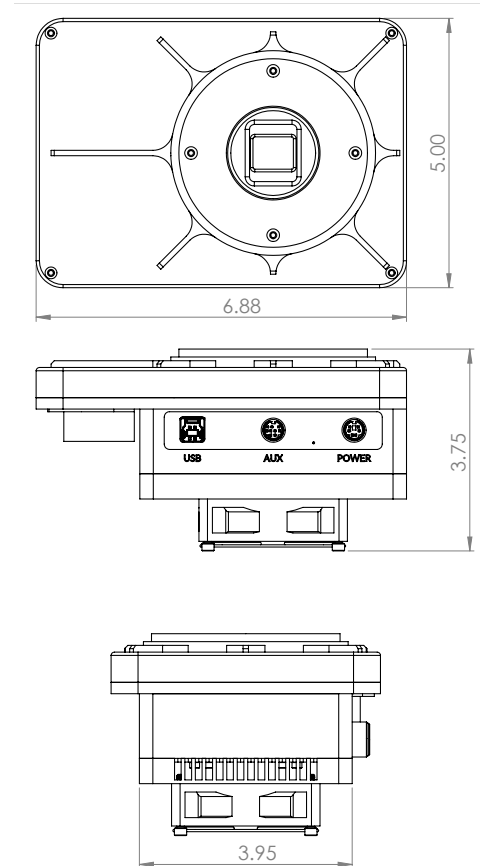
A/D Converter	12-bit with High Gain / Low Gain modes
Binning Modes	1x1, 2x2
Computer Interface	USB 3.0 (USB 2.0 compatible)
Cooling Delta	Approximately 30°C
Dark Current	0.1 e <sup>-</sup> /p/s at -5°C
Exposure	0.001 – 3600 seconds
Filter Size	36mm / 1.25"
Filter Wheel Option	STC-428-FW includes 8-slot carousel
Imaging / Pixel Array	3208 x 2200 pixels
Imaging Sensor	Sony IMX428 CMOS sensor
OS Compatibility	Windows 10 or 11
Peak QE	78% typical
Pixel Size	4.5 x 4.5 µm
Power	12VDC, 4A max
Read Noise (Typical)	1.9 e <sup>-</sup> High Gain, 2.5 e <sup>-</sup> Med Gain, 5 e <sup>-</sup> Low Gain
Sensor Size	14.4 mm X 9.9 mm
Shutter	Global Shutter (electronic), Opaque Slot on Filter Wheel for Dark Frames, Optional Mechanical Dark Shutter
Temperature Regulation	Yes

**SENSOR SPECIFICATIONS**

17.6 mm diagonal	80 dB dynamic range
Typical QE:	
•	Red (635-700 nm) ~ 63%
•	Green (520-560 nm) ~ 78%
•	Blue (450-490 nm) ~ 75%

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<https://diffractionlimited.com/product/sbig-stc-428-fw/>