QHYCCD

Medium Size Cooled CMOS Cameras QHY183/163/165 168/247/128/367

The QHYCCD medium size COLDMOS camera series includes all of our cooled cameras with CMOS sensor sizes from 1 inch to Full Frame (35mm Format) and includes BSI (back-illuminated) as well as FSI (front-illuminated) CMOS sensors in both monochrome and color cameras.

- USB 3.0
- Front-illuminated and Back-illuminated Sensors
- Lightweight Compact Design
- Regulated TE Cooling Delta -35C to -40C
- 128 MB DDR Frame Buffer
- ST-4 Compatible Guide Port
- Filter Wheel Port
- Anti-Noise Technology
- Anti-Amp Glow Technology
- Anti-Dew Technology

All models include a heated optical window to prevent external dew, a desiccant plug socket to help maintain a frost-free CMOS chamber, a 128MB frame buffer, a filter wheel port, and 2-stage TE cooling to reduce the sensor temperature to -35C or -40C below ambient along with temperature regulation to maintain a constant temperature set point. Due to the efficient TE cooling, single exposures many minutes in duration are possible, making them ideally suited for deep space imaging of dim objects as well as brighter objects and planets. The Horsehead Nebula image on the reverse side is only 3 x 20 minute single-shot color exposures.

Six of these medium sized COLDMOS cameras use Sony Exmor CMOS sensors, including the two largest with 24 and 36 Megapixels, respectively, in 35mm format sensors. Even these large sensors deliver multiple frames per second at full resolution. These front illuminated sensors also exhibit very high sensitivity. One model in this group (QHY163M/C) uses a Panasonic back-illuminated sensor and one model (QHY183M/C) uses a Sony STARVIS Exmore R back-illuminated sensor. STARVIS is Sony's designation for sensors capable of recording under starlight. These back-illuminated sensors have even greater sensitivity as well as noise reduction - the key factors to enhancing image quality, while radically realigning their fundamental pixel structure from front-illumination to back-illumination. They retain the advantages of CMOS image sensors such as low power consumption and high-speed operation while dramatically improving sensitivity.

Horsehead Nebula Image QHY-128C, Courtesy Tony Hallas

Model	QHY-183M/C	QHY-163M/C	QHY-165C	QHY-168C	QHY-247C	QHY-128C	QHY-367C
Sensor	Sony IMX183 Exmor R CMOS	Panasonic MN34230 CMOS	Sony IMX080 Exmor CMOS	Sony IMX071 Exmor CMOS	Sony IMX193 Exmor CMOS	Sony IMX128 Exmor CMOS	Sony IMX094 Exmor CMOS
Illumination	**Back Illuminated**	**Back Illuminated**	Front Illuminated	Front Illuminated	Front Illuminated	Front Illuminated	Front Illuminated
Total Pixels	20 Megapixels	16 Megapixels	16 Megapixels	16 Megapixels	24 Megapixels	24 Megapixels	36.4 Megapixels
Pixel Size	2.4um	3.8um	4.8um	4.8um	3.91um	5.97um	4.88um
Pixel Array	5544 x 3694	4656 x 3522	4952 x 3288	4952 x 3288	6024 x 4024	6036 x 4028	7376 x 4938
Optical Format	1-inch	4/3-inch	APS-C	APS-C	APS-C	Full Frame 35mm	Full Frame 35mm
FPS @ ROI	25@12Mp	100@800x600	130FPS@240 line	130FPS@240 line	10@1920x1080	32@480 lines	83@100 lines
FPS @ Full Resolution	15FPS	22.5FPS	10FPS	10FPS	3FPS	5FPS	3.2FPS
Shutter	Electronic	Electronic	Electronic	Electronic	Electronic	Electronic	Electronic
A/D Resolution	12-bit	12-bit	12-bit	14-bit	14-bit	14-bit	14-bit
Read Noise	1e- to 2.7e-	1e- to 2.4e-	2.3e- to 3.2e-	2.3e- to 3.2e-	1e- to 2.7e-	1.8e- to 4e-	2.4e- to 3.2e-
Full Well	16ke-	20ke-	46ke-	46ke-	36ke-	74ke-	56ke-
Weight (M/C)	450g	450g	700g	700g	699g	788g	788g
Reference Price (M/C)	$949 /$1099	$999 / $1259	$1199	$1499	$1999	$3499	$4399
Exposure	50us - 3600sec	50us - 1800sec	30us - 3600sec	30us - 3600sec	50us - 3600sec	60us - 3600se	60us - 3600se
Cooling Delta	-40C, Regulated	-40C, Regulated	-35C, Regulated	-35C, Regulated	-35C, Regulated	-35C, Regulated	-35C, Regulated

For more information visit http://www.qhyccd.com