



Technical data in direct comparison

Between the **QHY 600 models** and the **ZWO ASI 6200 MM Pro (Mono models)**¹



(„if two do the same thing it is not the same“)

| Camera Model | QHY 600 Mono LITE (QHY 600M PH-L) | QHY 600 Mono PHOTO (QHY600M PH) | QHY 600 Mono PRO (QHY600PRO-M) | ZWO ASI 6200 MM Pro |
|---|--|--|--|--|
| Image sensor | Sony BSI – IMX 455 | Sony BSI – IMX 455 | Sony BSI – IMX 455 | Sony BSI – IMX 455 |
| Quality of Senso | Consumer (Grade C) | Industrial (Grade K) | Industrial (Grade K) | Consumer (Grade – not specified) |
| No. Of pixels | 9.576 x 6.388 | 9.576 x 6.388 | 9.576 x 6.388 | 9.576 x 6.388 |
| Pixelsize | 3,76 µm x 3,76 µm | 3,76 µm x 3,76 µm | 3,76 µm x 3,76 µm | 3,76 µm x 3,76 µm |
| quantum efficiency (QE) | > 87 % | > 87 % | > 87 % | Peak 80 % |
| Full Well (without binning) | 51 ke- | 51 ke- | 51 ke- | 51 ke- |
| Full Well Capacity (binning at x2, x3) | > 204 ke- und > 408 ke- | > 204 ke- and > 408 ke- | > 204 ke- and > 408 ke- | Software -and Hardware-Binning at x2, x3. No specification about full well |
| Full Well Capacityin the extended dy-namic range (Extended dynamic range -HDR) Mode | Binning 1 x 1 > 80 ke- Binning 2 x 2 > 320ke- Binning 3 x 3 > 720ke- | Binning 1x1 >80 ke- Binning 2x2>320ke- Binning 3x3>720ke- | Binning 1x1 > 80 ke- Binning 2x2 >320ke- Binning 3x3 >720ke- | Binning 2 x 2 200 0ke- Not specified |
| Software Binning | x2, x3, x4 | x2, x3, x4 | x2, x3, x4 | x2, x3, x4 |
| AD Conversion | 16-bit (0-65535 Level) at 1X1, 18-bit at 2X2, 19-bit at 3X3 and 20-bit at 4X4 Software Binning | 16-bit (0-65535 Level) at 1X1, 18-bit at 2X2, 19-bit at 3X3 and 20-bit at 4X4 Software Binning | 16-bit (0-65535 Level) at 1X1, 18-bit at 2X2, 19-bit at 3X3 and 20-bit at 4X4 Software Binning | 16-bit (0-65535 Level) No furhter specificati-on of AD in binning modes |
| Interface USB 3.0 | Yes | Yes | Yes | Yes |
| Computer Interface 2 x 10 Gigabit Fiber Port | No | No | Yes – with optional Upgrading | No |
| Download speed FPS (16bit) | 2,5 fps / USB 3.0 | 2,5 fps / USB 3.0 | 2,5 fps / USB 3.0 4,0 fps with Fiber Port 10 Gb | 2 fps / USB 3.0 |
| 8K 30 fps Videostream | No | No | Yes | No |
| Built-in Image Buffer | 1 GB | 2 GB | 2 GB | 256 MB |

¹ The specifications in this table also apply to the two color versions of the QHY 600-Photo and QHY 600-Pro without restriction, with the exception of the sensor quality. The Mono versions have the Industrial (Grade K) sensor, the Color versions the Consumer (Grade C) sensor.

| Camer modell | QHY 600 Mono LITE | QHY 600 Mono PHOTO | QHY 600 Mono PRO | ZWO ASI 6200 MM Pro |
|---|--|--|--|--|
| Non-volatile memory / On camera storage ² | 64 MB | 64 MB | 64 MB | 192 KB |
| Dark Current | 0.0022e-/p/s at -20C 0.0046e-/p/s at -10C | 0.0022e-/p/s at -20C 0.0046e-/p/s at -10C | 0.0022e-/p/s at -20C 0.0046e-/p/s at -10C | This value is not comparable, because it depends on the gain, which QHY divides from 0-100 below, other manufacturers from 0-450 |
| Read noise | 1,0e -3,7e (Standardmode) | 1,0e -3,7e (Standardmode) | 1,0e -3,7e (Standardmode) | 1,2e -3,5e |
| Standard routines for further noise reduction | Ja | Ja | Ja | No specified |
| Shutter type | Electronic rolling shutter | Electronic rolling shutter | Electronic rolling shutter | Electronic rolling shutter |
| Delta T below ambient | 35° C | 35° C | 35° C | 35° C |
| Watercooling | No | No | Yes - delta T = 45° C | No |
| Anti-Dew Heater | Yes | Yes | Yes | Yes |
| Zero-Amplifer Gow | Yes | Yes | Yes | Yes |
| GPIO ³ | No | No | Yes | No specified |
| Multiple Readout Modi | 4 | 4 | 9 | 1 |
| Firmware/FPGA remote Upgrade | With USB 3.0 | With USB 3.0 | With USB 3.0 | No specified |
| Hardware Frame Sequence Number | Yes | Yes | Yes | No |
| Reboot the camera, without disconnecting the USB plug | Yes | Yes | Yes | No |
| Interface for GPS Hardware time signal | No | No | Yes | No |
| Back Focal Length | 17,5 mm (12.5 mm) | 17,5 mm (12.5 mm) | 17,5 mm (12.5 mm) | 17,5 mm |
| Special Ultra Short Back Focus | Yes - 7 mm | Yes - 7 mm | Yes - 7 mm | No |
| Telescope Interface | M 54 x0.75 mm | M 54 x0.75 mm | M 54 x0.75 mm | M 54 x0.75 mm |

² 10 MByte are user-accessible, e.g. for ROI sections for exoplanet analysis, occultations, air turbulence measurements, focus, optical analysis and much more.

³ 4 PIN high speed with flexible FPGA control. Can be used as in/out trigger, for synchronized control of multiple cameras, for high precision GPS time control and much more.

The data, and/or specifications in the ZWO column come from the original Website of ZWO ASI

<https://astronomy-imaging-camera.com/product/asi6200mm-pro-mono>

and from the original operating manual of the ZWO ASI 6200 MM Pro

https://astronomy-imaging-camera.com/manuals/ASI6200_Manual_EN.pdf

In case these data do change or are found to be altered, we will be thankful to learn about it, in order to actualize this spreadsheet

EPLANATIONS/Comments:

1. Extended Dynamic Range = HDR Modus

In the EDR setting the BSI sensor is read out two times. This extends the already very good real and native 16Bit dynamic range even further. This allows longer exposures without reaching saturation too quickly (= overexposure). With light intensive optics it is possible to expose longer without burning out (= being saturated). A greater depth of the signal is achieved, weaker structures can already be captured in the individual image, and as a whole they become more clearly visible. Note: EDR must be selected in the driver, only then darks, bias and flats are in the available mode for recording.

2. 1GB or 2GB DDR 3 Built-in buffer

In order to enable a smooth and simultaneous readout of the BSI sensor, QHY has increased the DDR Ram 4 to 8 times compared to many other manufacturers on the market. This helps to control the highly feared Amp Light Glow, because the large DDR Ram prevents data jams when reading out the sensor.

3. Reboot the camera without disconnecting the USB cable

The camera can be restarted by power on/off and it will automatically reconnect to the PC. In remote operation a MUST HAVE! This ability remedies one of the most hated downsides of USB-connection. At the same time, the robust Industry-Grade Chip of the QHY 600 is the secure solution to survive repeated power loss and uncontrolled cooling and heating of the Peltier -compared to a regular consumer CMOS-chip.

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