



Apx60

Atik Apx60 Camera Manual

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Contents

Introduction.....	2
Further information.....	2
What’s in the box.....	2
Getting to know your camera	
Camera parts.....	3
Sensor.....	3
Optical window.....	3
Analog to digital converter (ADC).....	3
Power consumption.....	3
USB port.....	4
Cooling.....	4
Dark frames.....	5
Binning.....	5
Gain and offset.....	5
Gain pre-sets.....	5
Offset for advanced settings.....	6
Power modes.....	6
Replacing the desiccant.....	7
Levelling plate adjustments.....	8
Technical specification.....	9
Declaration of conformity.....	10
Disposal of the camera.....	10
Servicing and repairs.....	10
Warranty.....	11

Introduction

Congratulations on your purchase of an Atik Apx60 camera. This manual will help you get the most out of your Atik Camera so please take the time to read it thoroughly and you'll soon be ready to discover new worlds.

Atik Cameras provide exceptional value for money, superior performance, and unparalleled ease of use. They are the result of extensive research and development; each one having been designed and built with the requirements of the most demanding end user in mind. Your Atik camera incorporates state-of-the-art design using high quality materials and will be your trusted imaging companion for a long time to come. The camera contains a Sony IMX455 back lit CMOS sensor with 3.78um pixels with a well size 51.4Ke-.

Further information

For easy installation instructions and useful information about how to take your first image, please refer to the Quick Start Guide included with your camera. Additional information about our software can be found in our documentation PDFs (Start Menu > Atik Cameras > Documentation), which are copied to your computer during the software installation. More information, including a variety of tutorial videos, is available on our website at www.atik-cameras.com



Apx60

What's in the box

Your Atik Apx60 box includes:

- Atik Apx60 CMOS camera
- M54 dust cap
- M54 to 2" eyepiece adapter
- USB3 cable
- Quick start guide
- Allen keys for front plate adjustment
- Desiccant port tool
- Please note software and manuals are available online at

www.atik-cameras.com/software-downloads/



Getting to know your camera



Camera parts

- 1 Desiccant port
- 2 2.1mm centre-positive 12V DC input
- 3 USB 2/USB 3 Port

Sensor

The sensor in the Apx60 camera is a Sony IMX type CMOS sensor.

Optical window

The optical window is quartz with BBAR coatings on both sides to negate problems with reflections in your images.

Analogue to digital converter (ADC)

The Atik Apx 60 uses 16-bit analogue to digital converters.

Power consumption

Atik Cameras are designed to have low power consumption to improve performance in the field. If you would like to run the camera from a 110/220V mains supply, make sure it's of good quality with a 2.1mm type plug, centre positive and capable of supplying a minimum of 5 amp.

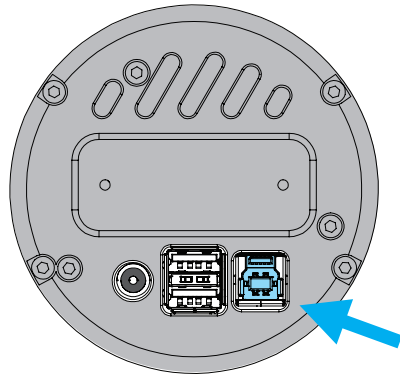
WARNING Mains power adaptors are intended for indoor use only. There is a risk of electric shock if the adaptor is used in damp environments. If in doubt, do not use the adaptor and consult a trained electrician.

USB port

The Atik Apx60 can be used with either a USB 3.0 or USB 2.0 cable. Your camera comes with USB 3.0 lead, any good quality USB 2.0 lead will work to give you the flexibility to choose whichever suits your set up and your imaging requirements best.

The Atik Apx60 features a 512mb DDR III image buffer to ensure fast image transfer from sensor to memory and low amp glow. The type of USB (2 or 3) connection determines the speed of transfer between this buffer to the PC. For high speed, you can use USB 3.0 or for a lighter more flexible cable use USB 2.0. The type of connection does not affect image quality.

The USB 3.0 cable is connected as shown below and can be connected to either a USB 3.0 or USB 2.0 port on your PC. Please note that USB 3.0 transfer speeds will only be reached when connecting the cable to a USB 3.0 port on your PC.



Cooling

The Atik Apx60 has a regulated cooling system, meaning that the CMOS sensor can be kept at your desired temperature throughout an imaging session. This also makes it easy to take dark frames at the same temperature as your light frames.

The cooling delta of the Atik Apx60 is -35°C . Please note that the cooling delta is how far below the ambient temperature the camera can achieve, rather than a fixed temperature it can cool to. This means the best temperature to image at will depend on your environment, and we recommend using a repeatable, stable temperature, rather than simply the maximum the camera can reach on a given night.

After switching on the camera, it's advisable to allow up to 5 minutes before taking images so that the temperature can stabilise. At the end of an imaging session, turn off the cooling and allow a few minutes before disconnecting the camera so that it can complete its warm-up sequence.

Dark frames

To get the most out of your Atik Apx60 camera for astrophotography, we recommend processing your images using dark frames. You can take dark frames by covering the front of the camera with a lens cap. Dark frame should be taken at the same temperature, exposure length and with the same gain and offset settings as your light frames.

A master dark should be generated by averaging a large number of individual dark frames. This can then be subtracted from the individual image sub frames during processing. Further information on using dark frames should be available in the manual of whichever image processing software you choose to use. Dark frames are not required for High-Speed Imaging.

Binning

Binning is a technique where groups of pixels are added together, with the result being a brighter image. The CMOS sensor in the Atik Apx60 only supports binning in software. This is where the pixel values are added together after image acquisition, as opposed to hardware binning where pixels are combined on the sensor.

Gain and offset

Your Atik Apx60 allows you to change the gain and offset settings for the camera. In very simple terms, this is analogous to the volume control on a radio. The greater the gain, the easier it is to detect faint signals; however, less detail might be seen in the brighter ones.

Gain pre-sets

We provide three gain pre-sets, and the option to use your own custom settings. The pre-sets are:

Low - Best for normal imaging. It is the best setting for detail in brighter objects and when individual images have high dynamic range.

Medium - A compromise of low and high. It's very useful if your mount is unguided and you need to take a lot of shorter exposures.

High - Best for sensitivity on dim objects but sacrifices detail in some of the brighter parts.

Custom - - You can also experiment with using your own gain and offsets. The gain can be set from 0 to 36 and the offset set from 0 to 4095. As mentioned, we find gain settings up to x30 are useful, depending on the situation, but above this the full well depth becomes incredibly low.

Offset for advanced settings

The offset is a voltage added to all pixels. It's used to ensure the digitised pixel values remain above zero while maximising dynamic range. It can set between 0 - 65534, with the default setting as the low pre-set values.

Power modes

The Apx 60 has three different selectable power modes.

PowerSave – This mode allows the camera to shut down non-essential circuits during exposures. **This is the mode that should be used for deep sky imaging as it will create the least noise in the image.**

Normal mode – This is the normal operating mode where all necessary circuits are powered up.

Fast – This mode allows the camera to be used for high-speed imaging, this is handy for planetary imaging and daytime imaging.

The power settings can be adjusted either by connection the camera in Atik Dusk or by using the properties box as you are connecting to a camera using ASCOM





Replacing the Desiccant

Your camera includes a high-performance molecular sieve desiccant tablet which is used to avoid condensation inside the CMOS chamber. Although this desiccant will last a long time it may eventually need replacing or recharging, in which case please follow the instructions below:

- To replace the desiccant, open the desiccant port with the supplied plastic tool and a screwdriver and take out the used tablet.
- To recharge the desiccant, place the tablet in an electric oven at 200°C for 2 hours. Take the tablet out the oven (CAUTION: the tablet will be very hot) and allow it to cool down.
- Place the recharged tablet back in the camera, replace the port cover and tighten (no need to over-tighten). Wait 24 hours before connecting the camera again.

We recommend leaving the camera in a warm, dry environment with the port open while you are recharging the tablets to ensure any remaining moisture can dry out.

You will notice that there is a filter inside the desiccant chamber. The purpose of this is to avoid contamination of the chamber when the desiccant is being replaced. The filter is very fragile and should not be touched.

Levelling plate adjustment

The front plate of the Apx60 has an M54 x 0.75 mm female thread to connect to telescopes and accessories. It is adjustable to allow the user to fine tune the camera to the optical system. The front plate has been pre-set during manufacture accurately to the level of the sensor and normally does not need adjustment. If the user is having issues with misshapen star shaped on the side and corners of an image this method of adjustment can help.

Please only ever make the tiniest of adjustments to one set of screws at a time. Adjustment is similar to collimating a Newtonian telescope. The headed screw when turned clockwise will “pull” the front plate towards the camera and the grub screw next to it will “push” the front plate away from the camera. The screw is located in such a position so adjustments can be made with the camera in the image train to allow the users to make adjustments without removing the camera from the telescope.

It is suggested you make adjustments using the following method: Take an initial image, inspect the image, make adjustments, take another image and inspect it for changes and repeat this process until the desired results have been achieved.



TECHNICAL SPECIFICATIONS OF Apx60	
Sensor	Sony IMX455 CMOS sensor
Pixel array (resolution)	9568 x 6380 px
Pixel size	3.76 x 3.76 μm
Sensor size	43.3mm diagonal (40.9mm x 31.1mm)
Full well	>51,000e-
ADC	16 bit
Read noise	1.2e- low noise, 3.5e- high speed
Digitisation MBPS	Limited by USB3
Gain factor	Variable
Dark current	~0.03 e-/pix/sec at -10°C
Frames per second	Up to 4 FPS (with region of interest) and 2 FPS full frame
Cooling delta	-35°C
Regulated cooler	Yes
Water assist	No
Max. exposure	Unlimited
Min. exposure	0.001 s
PC Interface	USB2/USB3
Power requirements	12V DC, 5A
Backfocus distance	17mm ± 0.5 ; Without levelling plate = 9.5mm ± 0.5
Thread on front	M54 x 0.75
Weight	1.1kg
Overall dimensions	89 diam x 153 mm
Mono or colour	Either

The formula to calculate focal length is: (Pixel Size (μm) / Focal Distance (mm)) * 206.3 = angular resolution (arc seconds/pixel)

Declaration of Conformity

EU Declaration of Conformity

This product carries the CE Mark in accordance with the related European Directive. CE marking is the responsibility of:

Atik Cameras Unipessoal Lda.
R. Horta de Bacelos, 15
2690-390 SANTA IRIA DE AZOIA
Santa Iria da Azoia, Portugal



Critical Applications

This product is not designed for any “critical applications”. “Critical applications” means life support systems, medical applications, connections to medical devices, commercial transportations, nuclear facilities or systems or any other applications where product failure could lead to injury to persons or loss of life or catastrophic property damage.

This product is not a toy.

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Disposal of the Camera

When no longer required do not dispose of this electronic device with general household waste. To minimise pollution and protect the environment the camera should be recycled. Local recycling drop off points available under the Waste from Electrical and Electronic Equipment (WEEE) regulations which will accept the camera. For further information contact Atik Cameras Lda at the above address, or the shop from which the camera was bought.



Servicing and Repairs

Repairs, servicing and upgrades are available through your local dealer or by emailing contacting our technical support team through our contact page www.atik-cameras.com/#footer

Please note that modifications to the camera and/or accessories which are undertaken without the manufacturer’s written permission will void the warranty.

Warranty

The equipment is guaranteed against defective design, manufacture or materials for a period of one year from the date of purchase.

This means that Atik Cameras will repair or replace the equipment at its sole option, at no charge to the purchaser for parts or for labour, if the fault is reported within the guarantee period, provided however that Atik Cameras is able to duplicate the defect or problem at its facilities. This warranty does not apply to damage that occurred as a result of abuse or misuse, abnormal service or handling, damage which may have been caused either directly or indirectly by another product, or if the equipment has been altered or modified in any way, or if the damage was caused by repairs or service provided or attempted by anyone other than Atik Cameras. This warranty does not include or provide for incidental or consequential damages.

To exercise your rights under this warranty, you must return the equipment to the dealer from whom it was purchased together with proof of purchase and a clear description of the fault. If it's not possible to return the equipment to your dealer, you should contact Atik Cameras. Equipment returned to Atik Cameras must be sent in appropriate packaging and at your expense (insurance is recommended), together with proof of purchase, a return address and a clear description of the fault.

This does not affect your statutory rights.