

## Technical Specifications Made Easy

Welcome to tech-specs made easy, a complete description of Eclipse Imaging System specifications in terms we can all understand.



### TECHNOLOGY

**MICROBOLOMETER:** A bolometer is a device responsible for measuring the incidence of infrared energy to reach the camera's lens. In the case of the Eclipse Imaging system, a microbolometer is used. The advantage in this type of bolometer is that it requires no cooling. Other advantages to microbolometers is that they are small, lightweight, and use very little power.

### MATERIAL

**AMORPHOUS SILICON:** This refers to the radiation detecting materials used in the microbolometer. The two most common detector materials used are amorphous silicon and vanadium oxide. The Eclipse Imaging System uses amorphous silicon; because it is much easier to manufacture into the microbolometer than vanadium oxide the technology can be sold at much more affordable prices.

### SPECTRAL RESPONSE

**7.5 - 13.0  $\mu\text{m}$ :** This refers to the span of the electromagnetic spectrum in which the material used to create the microbolometer responds to or detects. In essence, it is the temperature range that the camera can see. Typically infrared cameras see in three categorical temperature ranges, they are: short (1-3), medium (3-5), and long (7-14). Each range sees in a different part of the spectrum, because humans emit infrared radiation in the long range the Eclipse is tailored accordingly.

### SENSITIVITY

**< 70 mK @ +30°C(+86°F):** Sensitivity or, what is sometimes referred to as NETD (noise equivalent differential temperature) is the method of calculating how sensitive an infrared camera is in detecting very small incremental temperature changes per degree. The specification is calculated in mK or millikelvin, and gets better as the number gets lower.

## CONTRAST

**SOFTWARE CONTROLLED:** Contrast refers to the application of color to the infrared image. In the circumstance of the Eclipse, the contrast is software controlled. The advantages of applying the images contrast in software as opposed to the cameras hardware are that it gives the user more dynamic ability to easily change the visual appearance of the image to whatever best suits their imaging needs. Second, in many cases it increases the accuracy of the quantitative infrared energy (temperature) information captured by the software.

## DATA OUTPUT

**GIGABIT ETHERNET:** This is the hardware technology or connection standard used to connect to the camera. In the case of the Eclipse Imaging system, Gigabit Ethernet is used. The advantage to gig-Ethernet is its superior data transfer speed capabilities. Of the most common connection types, including: Fire-Wire, USB, Coaxial Cable, Gigabit Ethernet is the fastest. As a result of its superior speed capabilities, the Eclipse can transfer very high quality digital imagery at very high frame rates, which makes for a smooth yet clear video.

## REFRESH RATE

**60 FPS:** This specification refers to the rate at which the image or frames displayed in the software's video refreshes. The typical rule is, the faster the frame rate, the smoother the video picture output will be. In many cases, camera manufactures have to choose between having a fast frames per second and image quality due to limitations in transfer speeds between the camera and the imaging computer, but In the case of the Eclipse, both have been possible due to the unique integration of high speed gigabit Ethernet (see data output for details).

## PITCH SIZE

**25µm:** Refers to the pixel density of the image captured and therefore exported by the imaging system. In the case of the Eclipse Infrared Imaging System, the pitch is 25µm. µm stands for microns, which is a very small unit of measure. The typical rule is the smaller the pitch size the more clearly the image will appear.

## OPTICS

**25° x 18.8°/0.4m:** The cameras optics are defined the same as they are in standard visual color spectrum photography. The variants of the lenses do not affect the quality or accuracy of the infrared imagery captured. Different lenses will however change angular range of view that will be displayed. In the case of the Eclipse, the lens is 25° x 18.8°/0.4m, which was chosen for its ability to comfortably image patients in most common exam room layouts.

## ARRAY SIZE

**320 x 240 UNINTERPOLATED:** This specification refers to the pixel array size, sometimes referred to as pixel resolution as the image is displayed on the imaging computer. In the case of the Eclipse Imaging System, the resolution is 320 x 240 which is the current standard for the medical industry. As an important feature, the pixel array is uninterpolated; this means that each pixel represents a separate temperature or infrared energy value. Many infrared imagers on the market will advertise a 320 x 240 array but in fact the actual array is 160 x 120 and the image is run through a series of algorithms that stretch or "interpolate" the image into a larger size. This method of image stretching severely lowers the accuracy and authenticity of the infrared images rendered and therefore can lead to compromised accuracy in the studies diagnostic capacity.

## **FOCUS**

**AUTO/MANUAL FOCUS:** Referring to the method of controlling the cameras focus. In the case of the Eclipse Imaging System, the focus is controlled at the software level. Using the Eclipse Imaging software, users can either auto-focus the image or manual focus the image closer or further away by using integrated incremental controls.

## **POWER**

**12/24 V, 12 W:** How much power the camera requires. In the case of the Eclipse Imaging System 12 W (watts) is required.

## **POWER SUPPLY**

**110 VOLTS AC:** How much power the cameras power supply requires from the wall outlet. In the case of the Eclipse Imaging System, 110 Volts AC is required.