EXTRONICS

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APPROVED

Operating Manual

iCAM501U and iCAM502

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

Country of Origin: United Kingdom

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Document Number **405444-2.1**

Contents

1 Safety Information and Notes

1.1 Storage of this Manual

Keep this user manual safe and in the vicinity of the device. All persons required to work with the device should be advised on where this manual is stored.

Important	**This manual applies to both the iCAM501U and iCAM502. It is important to note the different safety instructions for these two products. When 'iCAM50x' is used in this manual, it applies to both the iCAM501U and iCAM502. Dates of units can be found etched onto the battery cover.**

1.2 Special Conditions For Safe Use

1.2.1 ATEX / IECEx

1.2.1.1 iCAM501U (Units dated before 18th July 2013)

(Taken from ITS09ATEX2868X Issue 3 Section 17 and IECExITS09.0027X Issue 2)

For Group II applications only, the user shall not carry more than a maximum of two spare MN 1500 AA cells into the hazardous area. Precautions shall be taken to prevent short circuiting of un-protected battery terminals. Discharged cells shall be removed from the hazardous area.

For Group 1 applications, the changing of the batteries in the hazardous area and the transportation of spare batteries into the hazardous area is not permitted.

The USB port shall only be connected in the non-hazardous area

If the camera is damaged in any way, it shall be removed from the hazardous area.

1.2.1.2 iCAM501U (Units dated after 18th July 2013) and iCAM502 (all date codes)

(Taken from ITS09ATEX2868X Issue 4 (Amended March 2013) Section 17 and IECExITS09.0027X Issue 4)

For Group II applications only, the user shall not carry more than a maximum of two spare approved AA cells into the hazardous area. Precautions shall be taken to prevent short circuiting of un-protected battery terminals. Discharged cells shall be removed from the hazardous area.

The Temperature class for the equipment is determined by type of batteries used.
T4: Duracell MN 1500
T3: Duracell Procell PC 1500, Energizer E91, Panasonic LR6XWA

For Group 1 applications, the changing of the batteries in the hazardous area and the transportation of spare batteries into the hazardous area is not permitted.

Duracell MN 1500 is the only type of battery permitted for Group 1 applications

The USB port shall only be connected in the non-hazardous area

If the camera is damaged in any way, it shall be removed from the hazardous area.

1.2.2   Class1 Division 1

1.2.2.1   iCAM502 (units dated before 18th July 2013)

iCAM502 units with date codes <u>before</u> 18th July 2013 are <u>not</u> Class 1 Division 1 approved.

1.2.2.2   iCAM501U (all date codes) and iCAM502 (units dated after 18th July 2013)

 (Taken from FM approvals certificate 3042108 amended July 12th 2013)

Special conditions for use;
1. Must be used with Battery specified in the Operations Manual 331684
2. Temperature code is T4, T1=-20°C to 55°C with Duracell Plus or Procell MN1500 batteries, or T3C, Ta=-20°C to 50°C with Duracell Procell PC1500 or Energizer E91 batteries.

1.3   List of Notes

The notes supplied in this chapter provide information on the following.
- Danger! / Warning!
    - o   Possible hazard to life or health.
- Caution
    - o   Possible damage to property.
- Important
    - o   Possible damage to enclosure, device or associated equipment.
- Information
    - o   Notes on the optimum use of the device

1.3.1.1   Notes common to <u>all</u> iCAM501U and iCAM502 Units

Warning!	Any connection to the iCAM50x USB port must NOT be made in a hazardous area.

Warning!	The user shall NOT mix different cells in ANY application

Warning!	<u>For ATEX/IECEx GROUP I applications ONLY,</u> the changing of the cells in the hazardous area or the transportation of spare cells into the hazardous area is NOT PERMITTED.

Warning!	<u>For ATEX/IECEx GROUP II and Class 1 Division 1 applications ONLY,</u> the user shall not carry more than a maximum of 2 spare approved cells into the hazardous area. Precautions shall be taken to prevent short circuiting of un-protected cell terminals. Discharged cells shall be removed from the hazardous area.

Warning!	Warning! <u>For ATEX/IECEx GROUP II applications ONLY</u> the rated ambient temperature range of the equipment is from -20°C to 60°C.

Warning!	**For ATEX/IECEx GROUP I applications ONLY** the rated ambient temperature range of the equipment is from 0°C to 60°C.

Warning!	**For Class 1 Division 1 applications ONLY** the rated ambient temperature range of the equipment is from -20°C to 55°C/50°C dependent on the cells used (see Table 1).

Warning!	**If any damage to the iCAM50x is found which may invalidate the required safety minimum IP rating (IP54 for group I applications), (IP20 for group II and class 1 division 1 applications), the iCAM50x shall be removed from the hazardous area.**

Important	**Any repairs or replacement of parts MUST be performed by the manufacturer or its nominated sub-contractor or agent.**

Important	**The iCAM50x contains no user serviceable parts. The main part of the enclosure must not be opened under any circumstances.**

1.3.1.2 Notes specific to iCAM501U units dated before 18th July 2013

Warning!	**For ATEX/IECEx GROUP I and GROUP II applications, ONLY Duracell Plus MN1500 or Duracell Procell MN1500 cells may be used with the iCAM501U (see Table 1).**

Warning!	**For Class 1 Division I applications, ONLY Duracell Plus MN1500, Duracell Procell MN1500, Duracell Procell PC1500 or Energizer E91 cells may be used with the iCAM501U (see Table 1).**

Warning!	**For Class1 Division 1 applications NOTE THE DIFFERENT TEMPERATURE CLASSIFICATION of T4 at 55°C when Duracell MN1500/ Duracell Procell MN1500 cells are used (see Table 1).**

Warning!	**For Class1 Division 1 applications NOTE THE DIFFERENT TEMPERATURE CLASSIFICATION of T3C at 50°C when Duracell PC1500/Energizer E91 are used (see Table 1).**

1.3.1.3 Notes specific to iCAM502 units dated <u>before</u> 18th July 2013

Warning!	**For ATEX/IECEx <u>GROUP II</u> applications, <u>ONLY</u> Duracell Plus MN1500, Duracell Procell MN1500, Duracell Procell <u>PC</u>1500, Energizer E91 or Panasonic LR6XWA cells may be used with the iCAM502 (see Table 1).**

Warning!	**For ATEX/IECEx GROUP I applications, <u>ONLY</u> Duracell Plus <u>MN</u>1500 or Duracell Procell <u>MN</u>1500 cells may be used with the iCAM502 (see Table 1).**

Warning!	**For ATEX/IECEx applications, <u>NOTE THE DIFFERENT TEMPERATURE CLASSSIFICATION</u> of <u>T3</u> at 60°C when Duracell Procell <u>PC</u>1500, Energizer E91 or Panasonic LR6XWA cells are used (see Table 1).**

1.3.1.4 Notes specific to iCAM501U and iCAM502 units dated <u>after</u> 18th July 2013

Warning!	**For ATEX/IECEx <u>GROUP II</u> applications, <u>ONLY</u> Duracell Plus MN1500, Duracell Procell MN1500, Duracell Procell <u>PC</u>1500, Energizer E91 or Panasonic LR6XWA cells may be used with the iCAM50x (see Table 1).**

Warning!	**For ATEX/IECEx GROUP I applications, <u>ONLY</u> Duracell Plus <u>MN</u>1500 or Duracell Procell <u>MN</u>1500 cells may be used with the iCAM50x (see Table 1).**

Warning!	**For Class 1 Division I applications, <u>ONLY</u> Duracell Plus MN1500, Duracell Procell MN1500, Duracell Procell <u>PC</u>1500 or Energizer E91 may be used with the iCAM50x (see Table 1).**

Warning!	**For ATEX/IECEx applications, <u>NOTE THE DIFFERENT TEMPERATURE CLASSSIFICATION</u> of <u>T3</u> at 60°C when Duracell Procell <u>PC</u>1500, Energizer E91 or Panasonic LR6XWA cells are used (see Table 1).**

Warning!	**For Class1 Division 1 applications <u>NOTE THE DIFFERENT TEMPERATURE CLASSIFICATION</u> of T4 at <u>55</u>^{o}C when Duracell MN1500/ Duracell Procell MN1500 cells are used (see Table 1).**

Warning!	**For Class1 Division 1 applications <u>NOTE THE DIFFERENT TEMPERATURE CLASSIFICATION</u> of <u>T3C</u> at <u>50</u>^{o}C when Duracell PC1500/Energizer E91 (see Table 1).**

1.4 iCAM50x cell compatibility

| Camera	Application	Duracell Plus MN1500	Duracell Procell MN1500	Duracell Procell PC1500	Energizer E91	Panasonic LR6XWA
iCAM501U dated <u>before</u> 18th July 2013	ATEX/IECEx GROUP II	OK, T4 at 60°C	OK, T4 at 60°C	CANNOT BE USED	CANNOT BE USED	CANNOT BE USED
	ATEX/IECEx GROUP I	OK, T4 at 60°C	OK, T4 at 60°C	CANNOT BE USED	CANNOT BE USED	CANNOT BE USED
	CLASS 1 DIVISION 1	OK, T4 at 55°C	OK, T4 at 55°C	OK, T3C at 50°C	OK, T3C at 50°C	CANNOT BE USED
iCAM501U dated <u>after</u> 18th July 2013	ATEX/IECEx GROUP II	OK, T4 at 60°C	OK, T4 at 60°C	OK, <u>T3</u> at 60°C	OK, <u>T3</u> at 60°C	OK, <u>T3</u> at 60°C
	ATEX/IECEx GROUP I	OK, T4 at 60°C	OK, T4 at 60°C	CANNOT BE USED	CANNOT BE USED	CANNOT BE USED
	CLASS 1 DIVISION 1	OK, T4 at 55°C	OK, T4 at 55°C	OK, T3C at 50°C	OK, T3C at 50°C	CANNOT BE USED
iCAM502 dated <u>before</u> 18th July 2013	ATEX/IECEx GROUP II	OK, T4 at 60°C	OK, T4 at 60°C	OK, <u>T3</u> at 60°C	OK, <u>T3</u> at 60°C	OK, <u>T3</u> at 60°C
	ATEX/IECEx GROUP I	OK, T4 at 60°C	OK, T4 at 60°C	CANNOT BE USED	CANNOT BE USED	CANNOT BE USED
	CLASS 1 DIVISION 1	Camera not C1D1 approved	Camera not C1D1 approved	Camera not C1D1 approved	Camera not C1D1 approved	Camera not C1D1 approved
iCAM502 dated <u>after</u> 18th July 2013	ATEX/IECEx GROUP II	OK, T4 at 60°C	OK, T4 at 60°C	OK, <u>T3</u> at 60°C	OK, <u>T3</u> at 60°C	OK, <u>T3</u> at 60°C
	ATEX/IECEx GROUP I	OK, T4 at 60°C	OK, T4 at 60°C	CANNOT BE USED	CANNOT BE USED	CANNOT BE USED
	CLASS 1 DIVISION 1	OK, T4 at 55°C	OK, T4 at 55°C	OK, T3C at 50°C	OK, T3C at 50°C	CANNOT BE USED

Table 1 iCAM50x Cell Compatibility

2 User Guide

2.1 Preparing for Use

The iCAM50x is shipped with a protective film fitted to the front and rear windows. This should be removed carefully before use.

The iCAM50x may be used with the protective rubber over-boot supplied. Only the rubber over-boot supplied by Extronics should be as it is made from electrostatically-dissipative material.
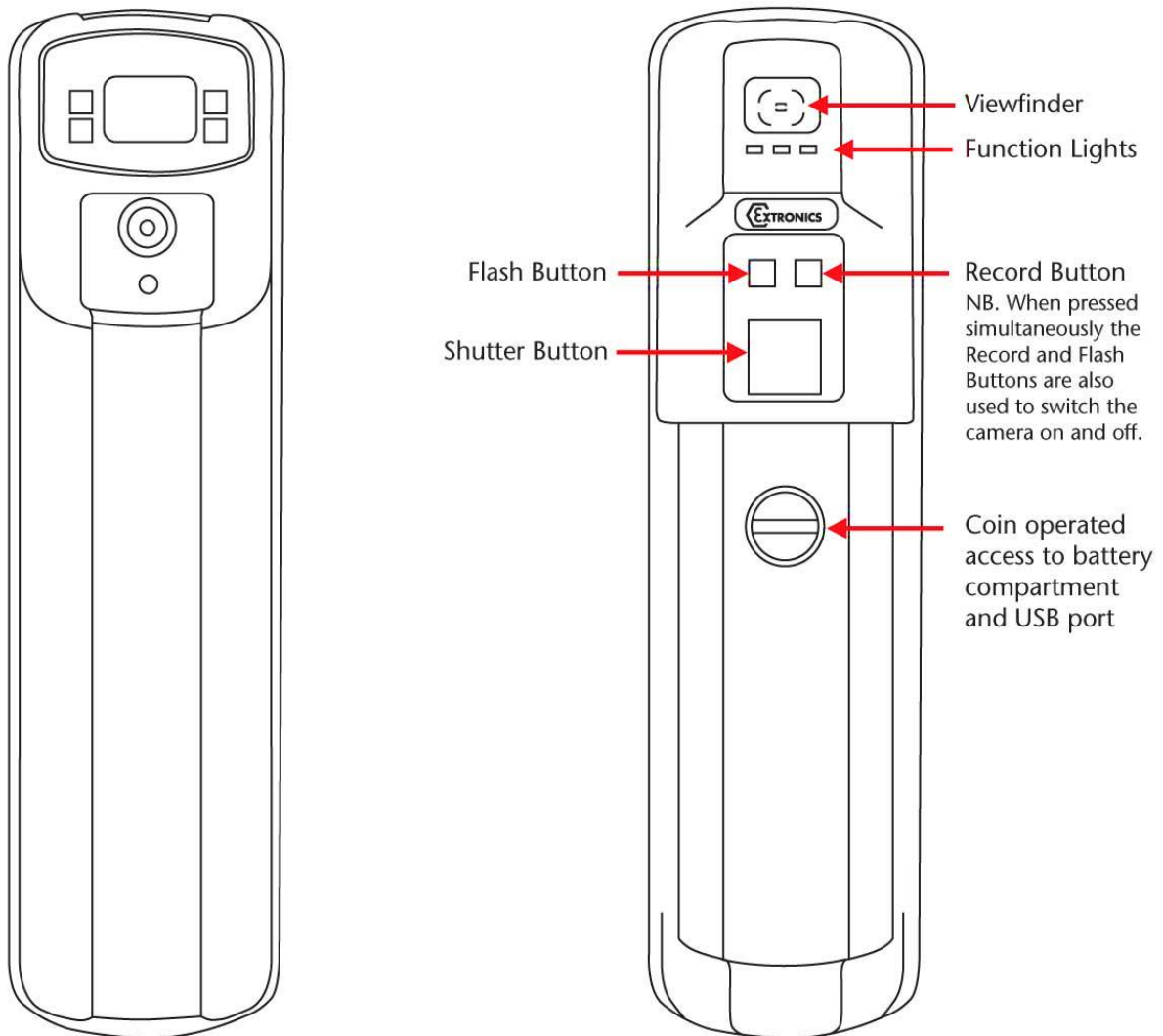
2.2 Changing/Installing Batteries

Warning!	**For <u>iCAM501U</u> refer to notes in section** Error! Reference source not found.**, and refer to** Error! Reference source not found. **for permitted cells.**

Warning!	**For <u>iCAM502</u> refer to notes in section** Error! Reference source not found.**, and refer to** Error! Reference source not found. **for permitted cells.**

To change or install the batteries in the iCAM50x, turn the screw as indicated below to remove the cover:
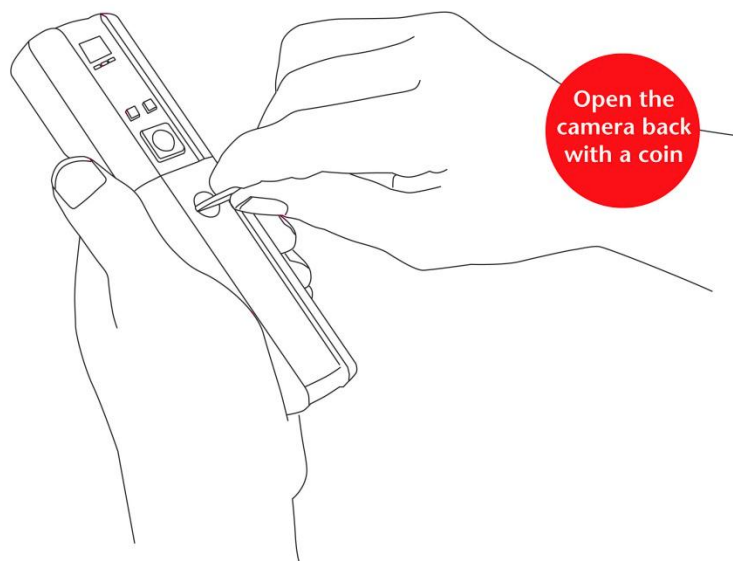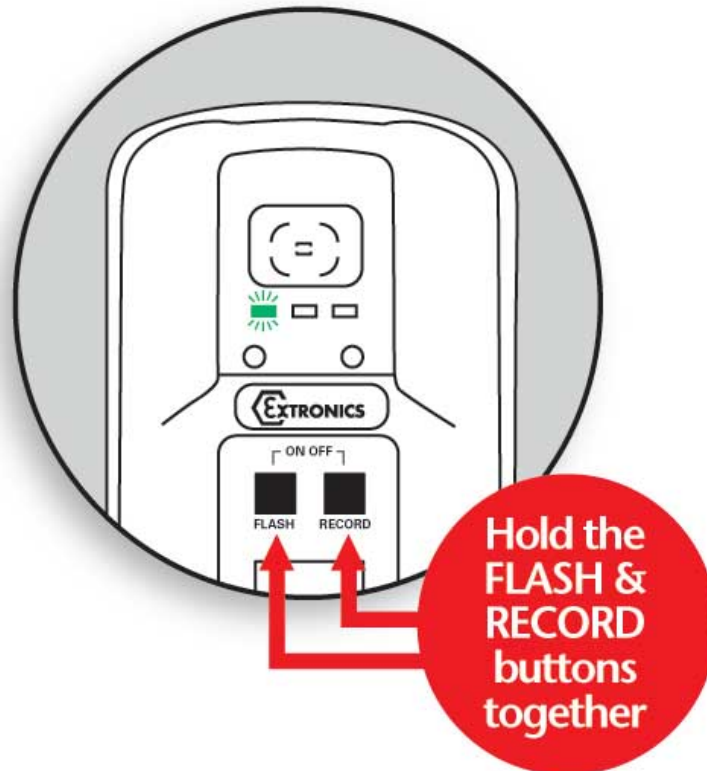

Install the batteries in the correct orientation (indicated on the enclosure) and close the lid again:
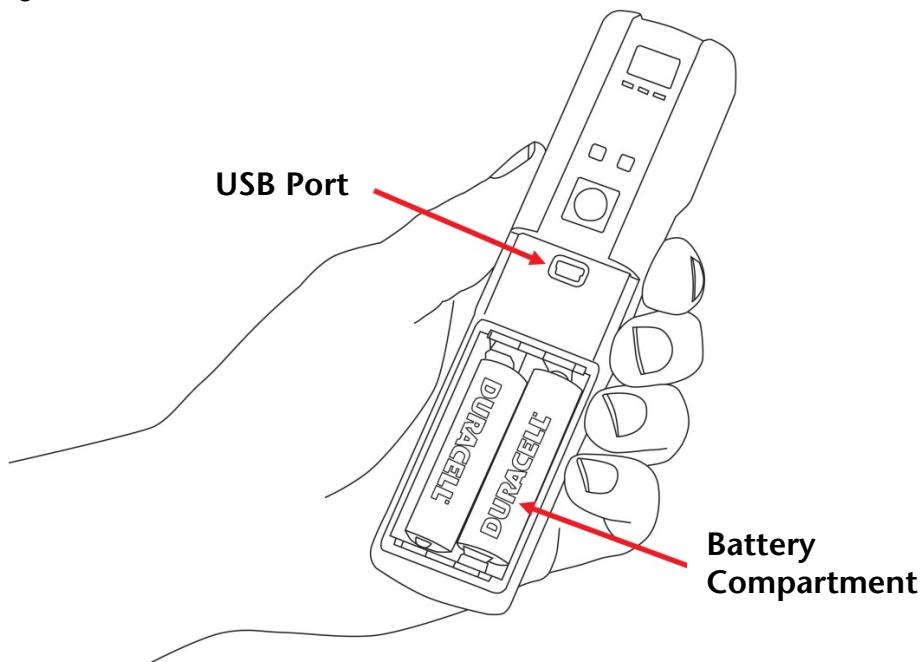
2.3   Powering On/Off

Information	The iCAM50x must be fully powered on before plugging a USB cable into the camera or taking a picture. This will be indicated when the green LED has stopped flashing rapidly.

The Green LED will flash rapidly for ~10 seconds & the Blue and Red LED will flash briefly. The Green LED then goes solid when ready. The Green LED flashing slowly (approximately 1 flash per second) indicates a low battery level.

The diagram above shows how to power on the iCAM50x. The same procedure is required to turn the iCAM50x off. Once it is turned off no LEDs should be lit.

2.4   Taking a Picture
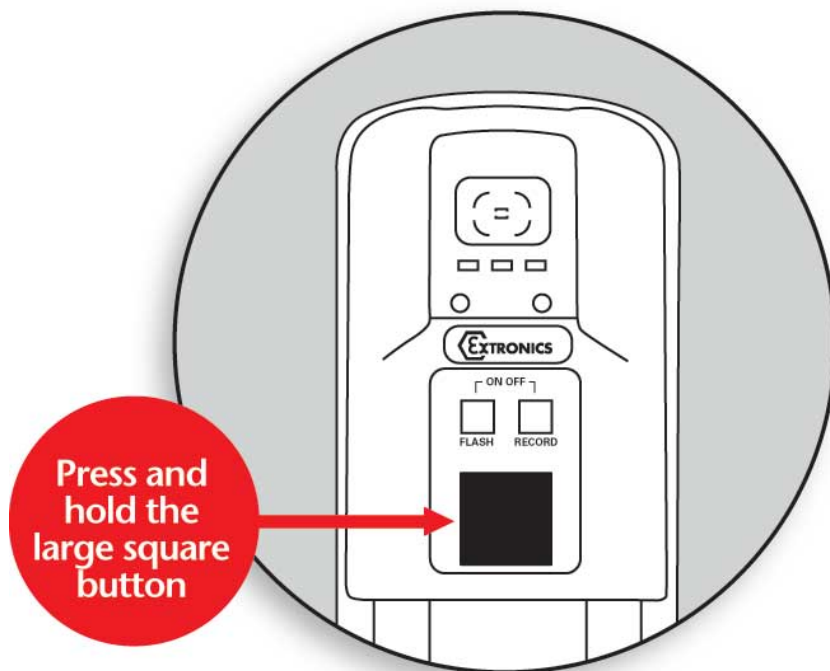
1. Press and hold the picture button until the Green LED starts flashing rapidly.
2. Wait for the Green LED to stop flashing before moving the camera.

2.5   Picture Quality

To indicate a good picture has been taken, all three LED's flash TOGETHER three times and you will hear a beep.

Good Picture
To indicate a good picture has been taken, all three lights flash TOGETHER three times and you will hear a beep.

To indicate a bad picture, the three LED's flash IN SEQUENCE three times from right to left i.e. red, blue, green etc.

The iCAM50x will still store the picture even if it is indicated as having poor quality. The reason for this is that factors such as the lighting conditions may mean it is not possible to get a perfect picture, and a poor one is better than no picture. However it is strongly recommended that another picture is taken.

If the flash is required when taking a picture in low lighting conditions, turn the flash on as indicated in the next section.

2.5.1 Image blur analysis feature

Images are analysed for characteristics of blurring, and given a score, which is in turn compared with a threshold based on the average light level in the image. Good or bad images are indicated using the LED sequence previously described.

However, the reliability of the image analysis function is dependent on the nature of the scene being photographed. Images which contain little or no details such as edges (for example a blank wall) may be indicated as blurred when they are in-fact acceptable. Therefore the user should bear this limitation in mind when taking pictures, and it is suggested that users should take some practice shots to get a 'feel' for the way in which this software behaves.

2.6 Using the flash

Press the flash button and the red LED will start to flash. The LED will become solid indicating the flash is ready for use. The green LED flashing slowly indicates low battery. Once enabled the flash function is automatic i.e. will only operate in low light conditions.

Flash Button
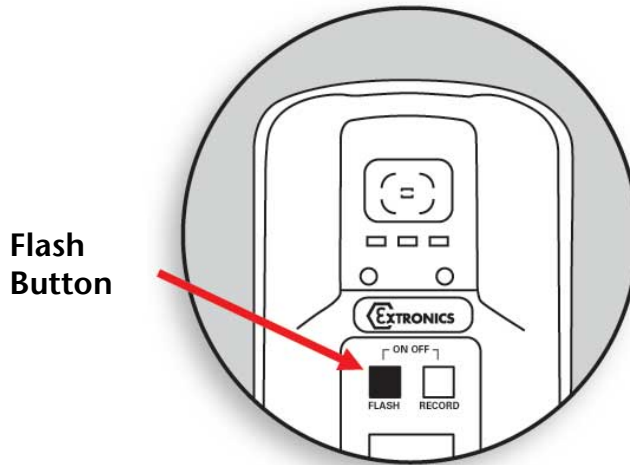
Note: The flash can take up to 20 seconds to fully charge when the batteries are depleted.

2.6.1   Variable flash brightness

The purpose of this feature is to reduce the incidence of over-exposure of images when close-up shots of reflective surfaces are taken with the flash; when the flash is enabled, and a shot is triggered, a short low-brightness 'ranging' flash pulse will firstly be seen, immediately followed by the image capture flash. The iCAM50x software rapidly analyses the reflected light level from the ranging pulse, and adjusts the brightness of the flash accordingly. However, this system is not infallible, and so the flash may still be too bright under some circumstances. The camera will indicate a bad image if the light level is extremely high, but if you are trying to photograph text close-up on a reflective rating plate for example, it is strongly recommended to use ambient lighting where possible.

2.6.2   Compatibility of the iCAM50x LED flash with optical flame detection equipment

The flash LEDs fitted to the iCAM50xoperate with a peak wavelength of 440nm (with a secondary lower peak at 550nm). Therefore the majority of the light emitted is towards the blue end of the visible spectrum.

Typical UV/IR flame detectors operate in the 180-260nm UV range and the 2000-4000nm IR range. Consequently the majority of the energy emitted by the flash on the iCAM50x is well outside of the operating range of typical flame detectors.

However, Extronics have not done any testing of the iCAM50x with optical flame detectors, so we cannot guarantee compatibility with any specific model of detector.

If you do find that particular sensors may be activated by the flash, it can be turned off by the user with the press of a key as per the operating instructions.
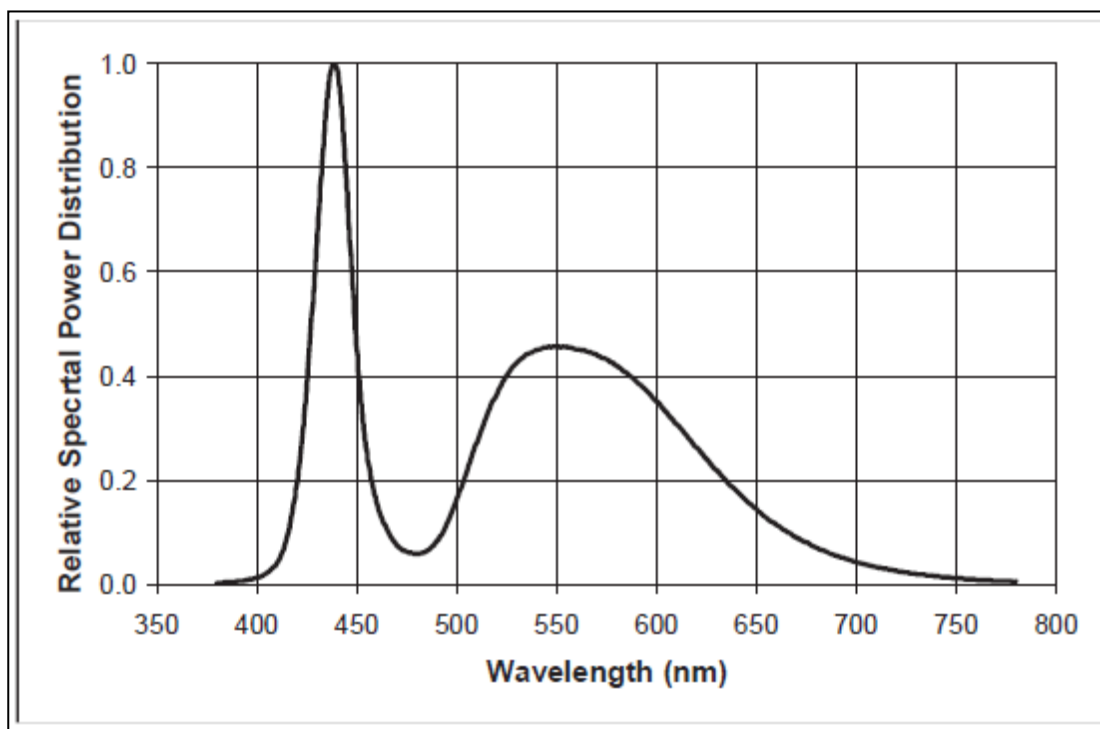
iCAM50x LED Flash Spectral Response

2.7 Voice record function

1. This feature allows a message to be associated with a picture. Press the record button – the blue LED should illuminate, indicating the feature is enabled. Take a picture in the usual way but CONTINUE to hold the picture button.
2. When the blue LED flashes, record your message and release picture button when finished.
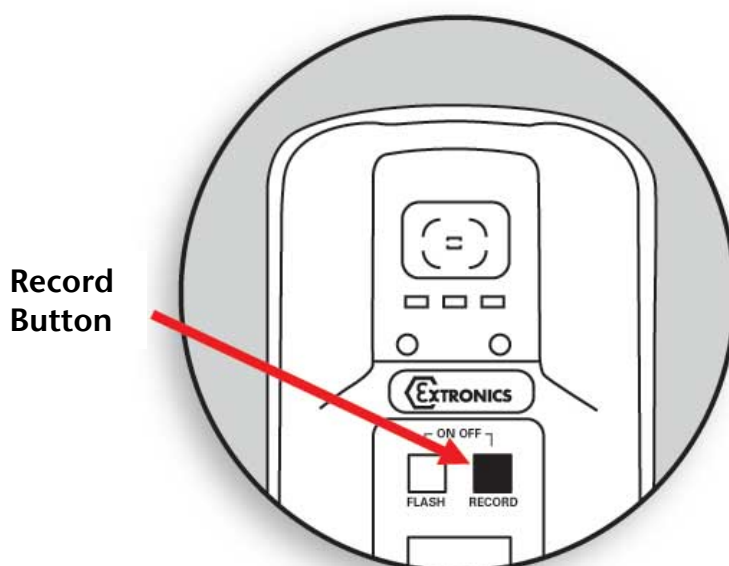
Note: The optimum distance is 10cm from the mouth which ensures that not too much background noise is picked up. Once the audio recording is finished simply release the button and the recording will be saved to the flash memory as a *.wav file with the same filename as the image file.

2.8   Connecting the iCAM50xto a computer

Note	The iCAM50x does not require the installation of any drivers

Simply turn on the iCAM50x, connect the USB cable to a Windows 7, Vista or XP computer and follow the onscreen instructions.

2.9   Downloading Pictures and Audio

The iCAM50x has been designed to use the widely supported Picture Transfer Protocol (PTP) to allow it to easily communicate with multiple operating systems without having to install drivers. This is supported by Windows XP and above, and also by most versions of Linux.

The iCAM50x images are stored with the time and date shown in the filename, and the properties of the file also contain the date and time the picture was taken. This date and time is also stamped within the image. The iCAM50x automatically generates files with the following name structure:

Camera	Pictures	Audio
iCAM501U	iCAM501_HHMMSS-DDMMYYY.jpg	iCAM501_HHMMSS-DDMMYYY.aud.wav
iCAM502	iCAM502_HHMMSS-DDMMYYY.jpg	iCAM502_HHMMSS-DDMMYYY.aud.wav

Where:
HH = Hour,MM = Minutes,SS = Seconds,DD = Day,MM = Month,YYYY = Year

Example of iCAM50x image time stamping

If the clock on the iCAM50x has not been set, and the camera has been stored without batteries for an extended period of time, the camera will use filenames in the format 'DSCxx'. To resolve this issue, set the clock as described in Section2.10.

To download the pictures and audio from the camera to a PC, remove the battery cover by turning the screw, a mini USB socket is then visible. Plug the mini USB end of the USB cable into this socket and the other standard USB plug end into the PC.

The iCAM50x must be powered on and the green status LED must be solid before connecting to a host operating system, otherwise the operating system will not establish communication with the camera. Once the green LED has become solid connect the iCAM50x via a USB cable to the host computer.

2.9.1   Windows XP

Once the iCAM50x has been connected to a machine running Windows XP, communication will automatically be established. A "balloon" icon will show up in the taskbar stating that "Your new hardware is installed and ready to use".

If the Windows 'Autorun' feature is enabled (it is enabled by default) a window like the one below will be shown. By clicking on any of the listed programs and then clicking ok the files currently on the camera will be displayed in the chosen application, by clicking cancel nothing will open.

2.9.2 Windows Vista / Windows 7

Once the iCAM50x has been connected to a machine running Windows Vista or Windows 7, communication will automatically be established. A "balloon" icon will show up like the one pictured below:


If the Windows Autoplay feature is enabled (it is enabled by default) a window like the one below will be shown. By clicking on any of the listed options and then clicking ok the files currently on the camera will be displayed in the chosen application. By clicking the close button nothing will happen.

2.9.2.1   Operation without windows 7 Autoplay

Simply browse to Computer\iCAM50x, and click on Internal NAND Flash as shown. Pictures and audio are presented as a list of files
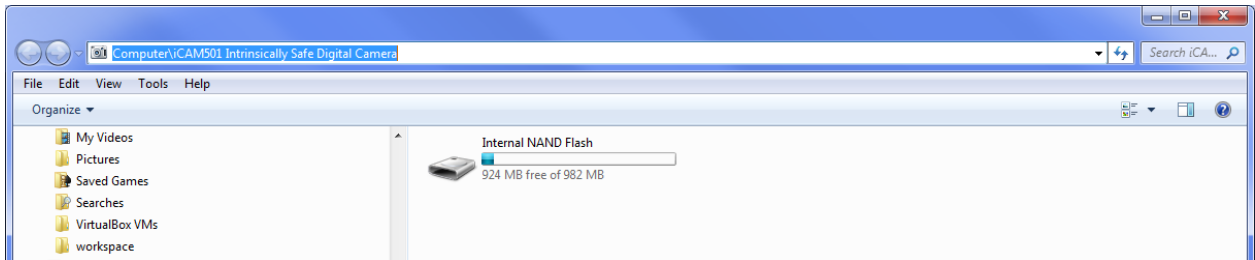
2.10 Setting Time and Date of the iCAM50x

The iCAM50x has an internal clock which is used to time code the JPEG file with information on when a picture and audio file was taken. The internal clock will need to be set when the camera is first used or when the batteries have been removed for an extended period of time. If the time and date is not set the JPEG files will have an incorrect time code embedded into the file, and the filename will be in the DSCxxx format.
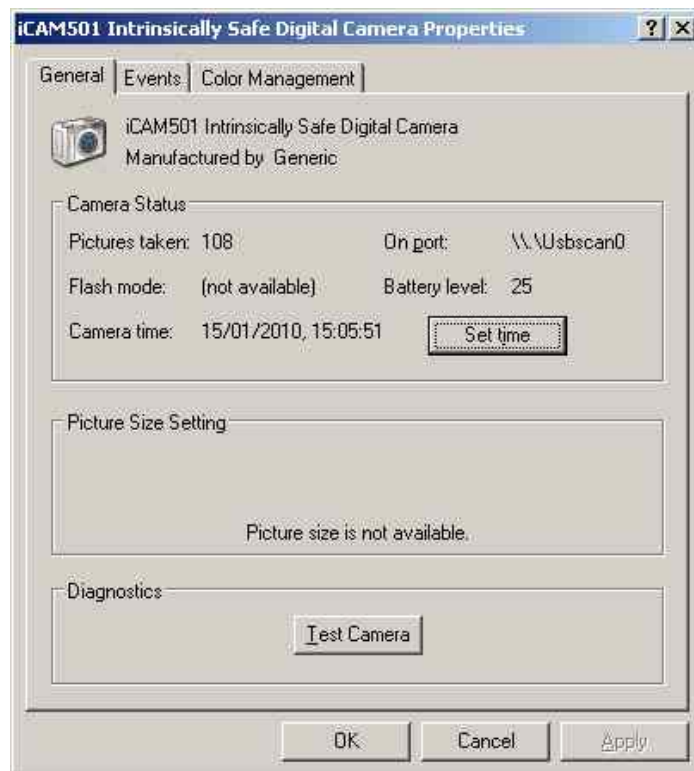
2.10.1 Setting Time and Date in Windows XP

Attach the iCAM50x to the machine running Windows XP once the green status LED has turned solid. Navigate to 'My Computer where an icon for the iCAM50x will be displayed as shown below. Right click on the iCAM50x icon and click properties.

When the camera is first plugged in click 'Properties' and the following display is likely to be shown.

If there are large numbers of pictures on the iCAM50x this may take some minutes as it will download thumbnails for the pictures when it is first plugged in. If this is taking an excessive amount of time, try unplugging the USB cable and then reconnecting the device.

To set the time, simply click the 'Set Time' button; the iCAM50x will synchronize with the current Windows system time, you must therefore ensure that the Windows system time is set correctly.

2.10.2 Setting Time and Date in Windows Vista/ Windows 7

For Windows Vista and all versions of Windows 7, it is necessary to download the iCAM50x time setting application. Visit www.extronics.com and browse to the iCAM501U or iCAM502 product page for instructions. This software is common to the iCAM501U and iCAM502.

Click here to download the iCAM50x Time setting tool from the Extronics website.

Installation

Please note that you may require administrative rights on your computer to install and run this program. If in doubt, please consult your IT support service.

- In Windows XP/Vista/7, double click on the 'iCAM501 Windows Time Setting Tool.zip' file. This will open the zip file containing the program.

- Simply drag or copy the 'iCAM501 Windows Time Setting Tool.exe' file to your windows desktop or other convenient location.

Usage

To use the iCAM501 Time Setting Tool, simply follow these instructions:

1. Switch on your iCAM501 in the normal manner
2. Connect your iCAM501 USB port to your PC, set in normal operating mode (the same mode as used for downloading pictures).
3. Double-click on the iCAM501 Time Setting Tool application
4. If the application can successfully connect to your camera, the following window will appear:
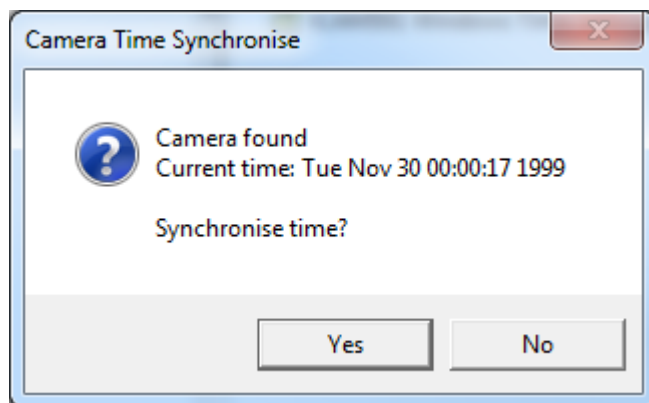
5. Press the 'Yes' button
6. If the time setting was successful the following should appear:
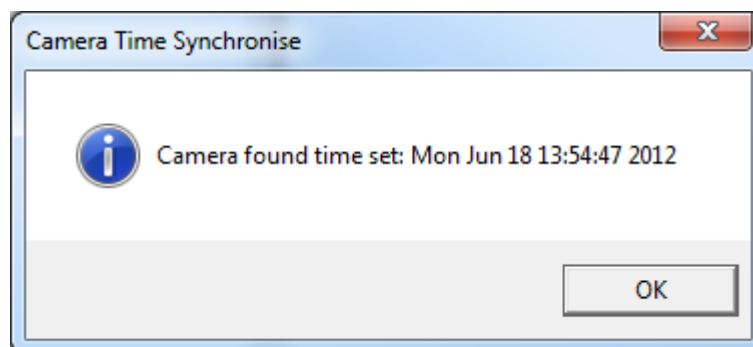
7. If the time setting process fails, the following will appear. Reconnect the iCAM501 and try again. If the process is still unsuccessful, reboot the iCAM501, and also check that you are able to download pictures from the camera per the instructions in the user manual.

2.10.3 Using Windows XP Microsoft Scanner and Camera Wizard

If the Microsoft Scanner and Camera Wizard is chosen to automatically start when the camera is plugged in a window should then popup similar to that below:

If you have recorded an audio image you will need to click the advanced users only link in the window to access these files, the following window will then be displayed allowing you to copy and paste the pictures.
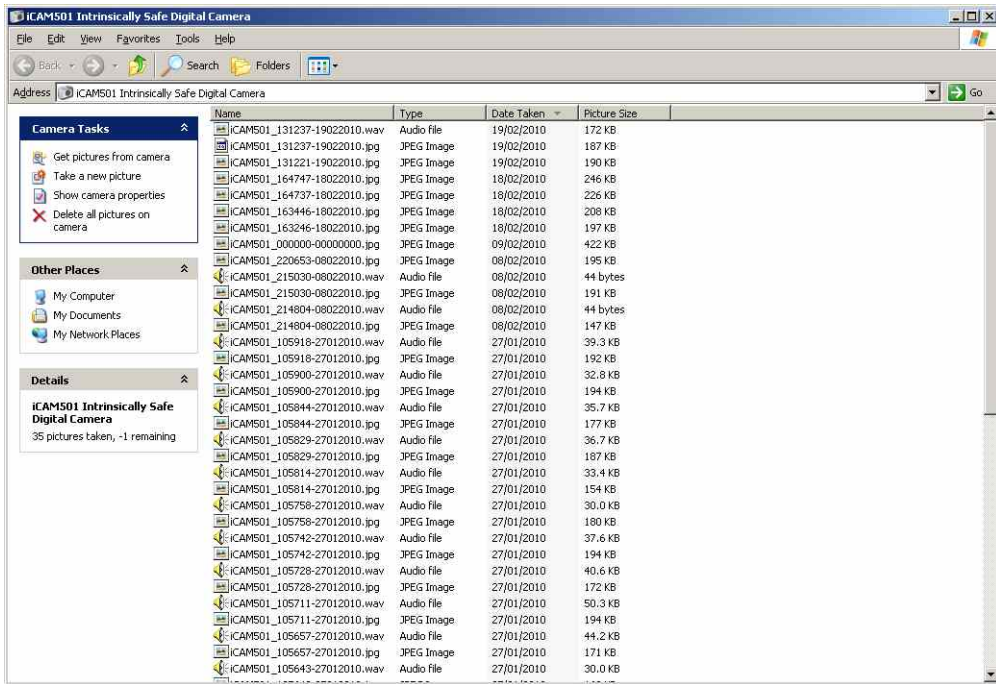
You will notice the audio file has been saved with the same numeric value as the picture it is linked to.

If you do not have any audio to download you can use the PTP feature to quickly move pictures to a folder of your choice. To do this click the next button and the windows below will appear, here select the images you wish to use and click next again
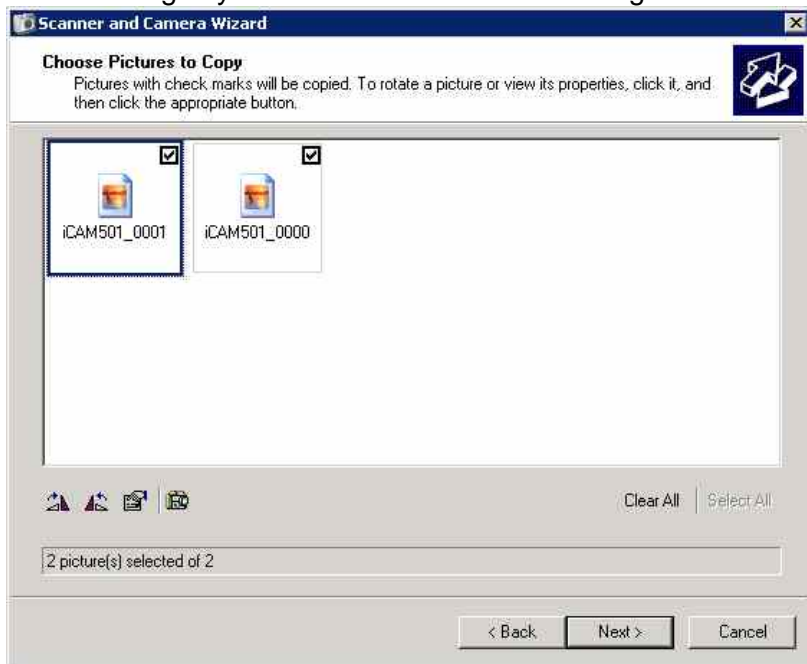
Select the folder where you wish to save the pictures to

23
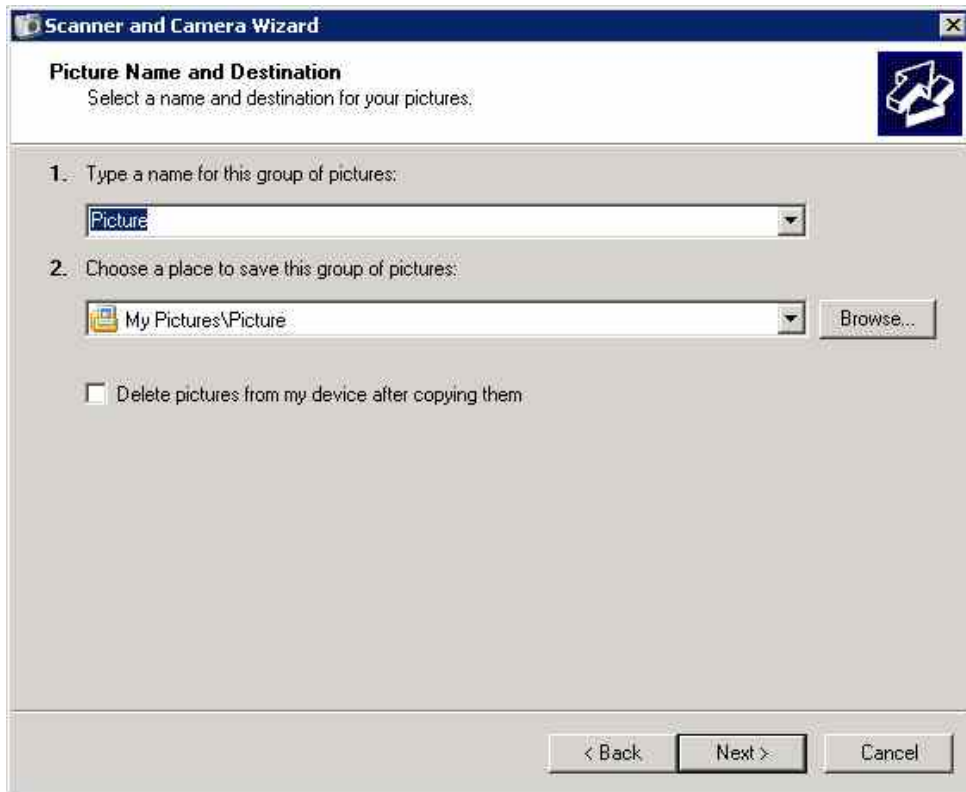
You will be presented with a progress bar indicating the transfer of the pictures
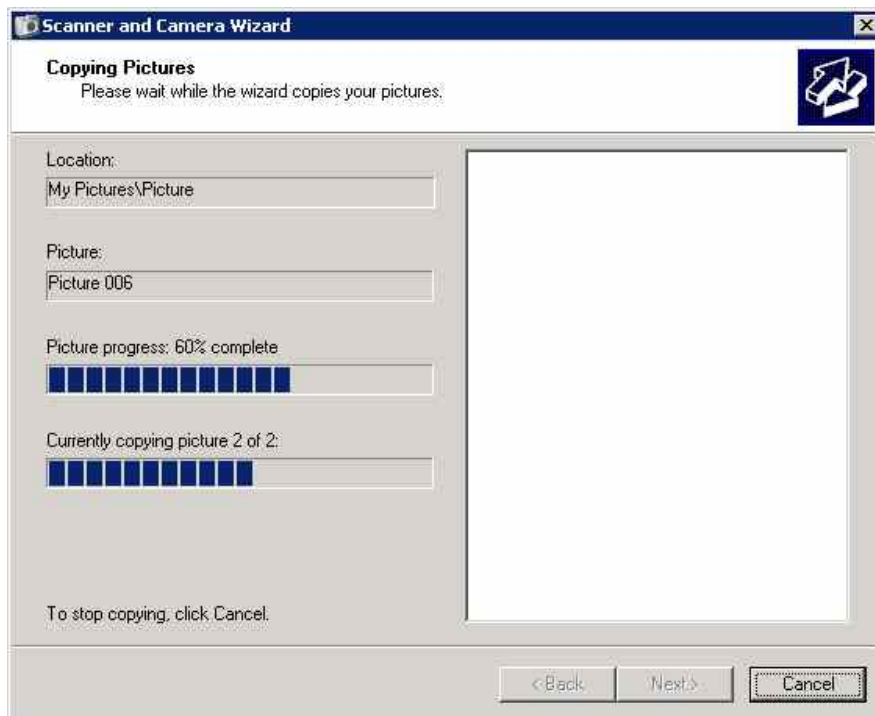
Then select "nothing, I'm finished working with these pictures" and click next and then the screen below will appear. This gives you the option to open the folder where the pictures were stored to or just click finished to exit the wizard.

2.10.4 Using Windows XP Automatic Picture Download Feature

If the Automatic picture download feature was selected in section 2.10.4,then once the iCAM50x has been connected to the PC,all files (both pictures and audio) will automatically be copied to the PC with a progress bar indicating this process.

Once downloaded Windows should then automatically open the folder where the pictures are located. If it does not automatically open,you can then browse to the fol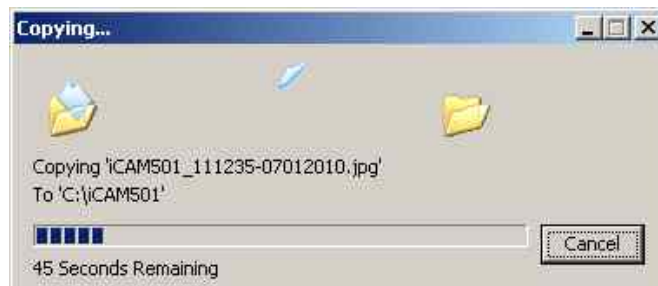der to view the files. If the "create folder with today's date"option was selected the pictures will be in an individual folder.If a file with the same file name is already in the download folder, Windows will prompt if you wish to replace these files.

2.10.5 Using Windows Vista / Windows 7 Import Pictures and Videos Wizard

By clicking on the import pictures and video option you will be presented with the following window. Note by using this feature audio files will not automatically be imported from the iCAM50x. Audio files must be downloaded manually using Windows explorer as the import wizard does not copy audio files.

You can enter a tag for the pictures which are to be downloading by entering the text into the field below. For example if you type in "Site Survey" then depending on the import setting chosen, the folder and/or pictures will contain the tag for easy reference.
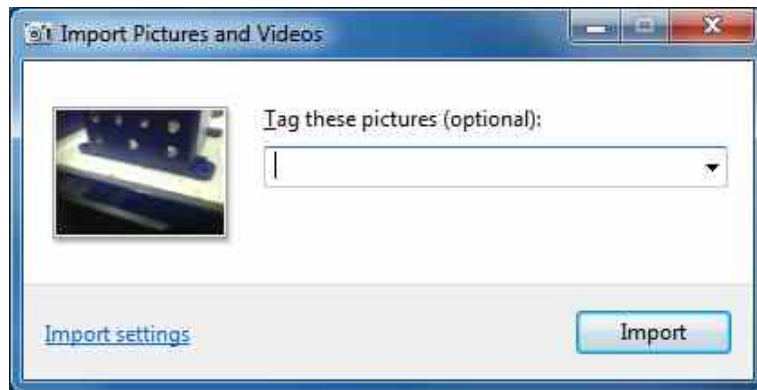
Click on the Import settings to customize the where and the way in which Windows will import the pictures.
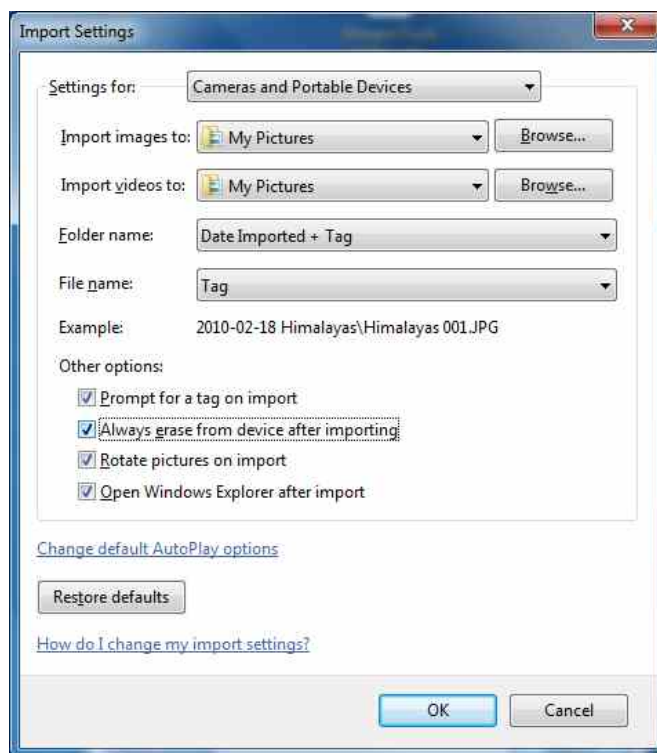
Here you can select you preferences for downloading pictures. You can choose the folder where all pictures should be imported to by clicking the browse button. Select the option for how a folder name is created when downloading pictures, i.e. it will import to ..\My pictures\Date Imported + Tag\
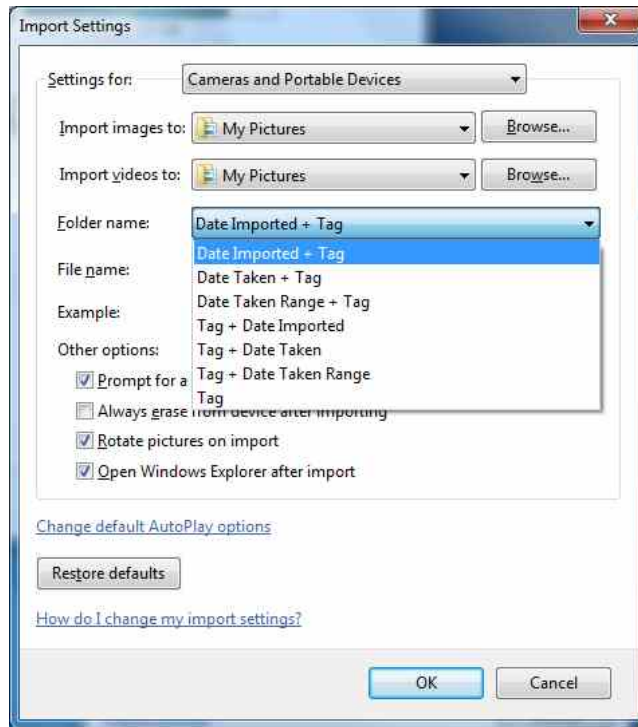
Select an option for how a file name is constructed. E.g. ..\My pictures\Date Imported + Tag\Tag xxx.jpg. This will rename all imported files to the tag plus a number. Select original file name if you wish to preserve the filename created by the iCAM50x as described in section 2.9.
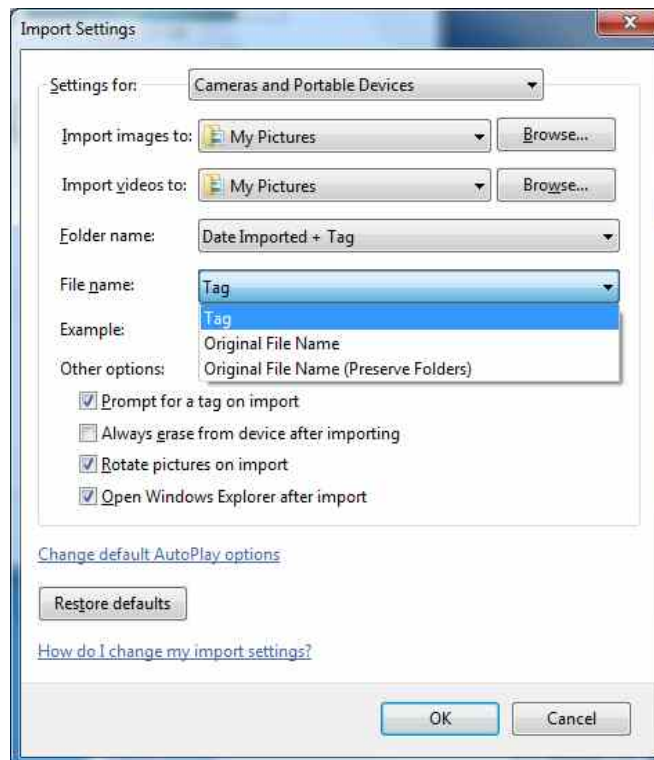
If prompt for tag on import is not selected the pictures will automatically be imported without a tag. You can automatically erase all imported files from the iCAM50x by selecting the always erase option.

Open Windows Explorer after import will automatically open the folder containing the latest files imported. Click 'OK' and then click 'Import', a progress bar will appear showing the progress of the import.
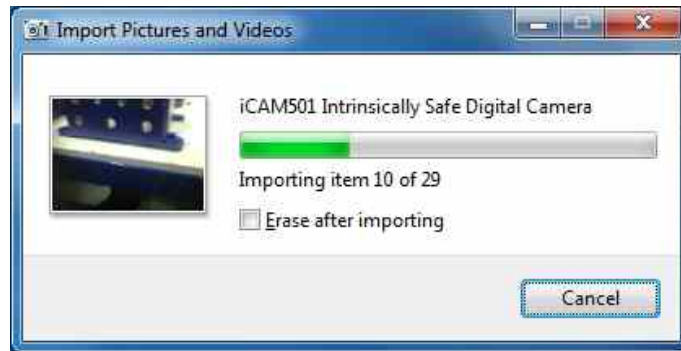
Once imported if the automatically open Windows Explorer option was selected the folder containing the pictures will open. If it does not open then use Windows Explorer to navigate to the import folder which was chosen in the import settings window.

2.11 Upgrading Firmware

Information	If you accidentally put the iCAM50x into upgrade mode the only way to get out of this mode is to remove a battery. This is a deliberate feature to stop the unit from being accidentally switched off during an upgrade

Important	If you decide to perform a firmware upgrade it is recommended to put a brand new pair of cells into the iCAM50x so that the unit cannot lose power during the upgrade.

Important	Do not remove the USB cable from the iCAM50x until the upgrade has completed or you may render the iCAM50x unusable.

Information	The iCAM50x can only be upgraded under Windows XP/Vista/7

From time to time Extronics will release firmware updates which will enhance and improve the iCAM50s. In order to perform a software upgrade the iCAM50x must be put into upgrade mode. First ensure that the unit is powered down, then press and hold the flash button and picture taking button at the same time for approximately 2 seconds. The middle blue LED should then flash, indicating it is in upgrade mode.

Once in this mode connect a PC running Windows XP/Vista/7 to the unit via a USB cable and run the upgrade file which has been obtained from Extronics. The unit should power itself off once the upgrade is complete.

Under Windows XP/Vista/Windows 7, simply run the upgrade installer provided. When the window below is shown, select the desired location and press 'Install'. If you are asked about installing software from an unknown vendor, just press the 'continue' button.
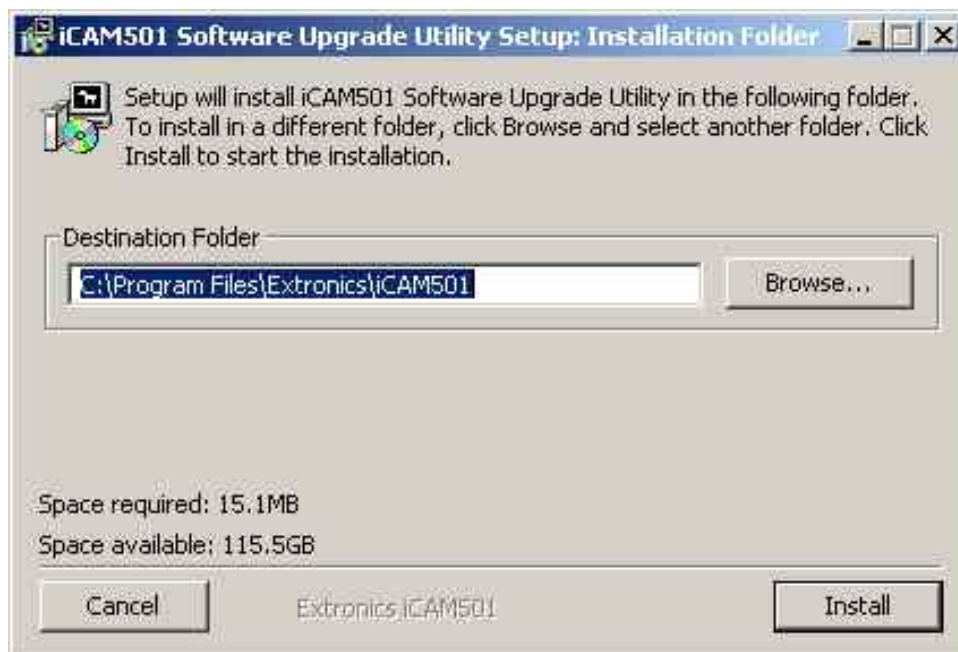
Once installation is complete, go to Start ->Programs -> Extronics -> iCAM50x and run the desired installation configuration.

The following window should be displayed:
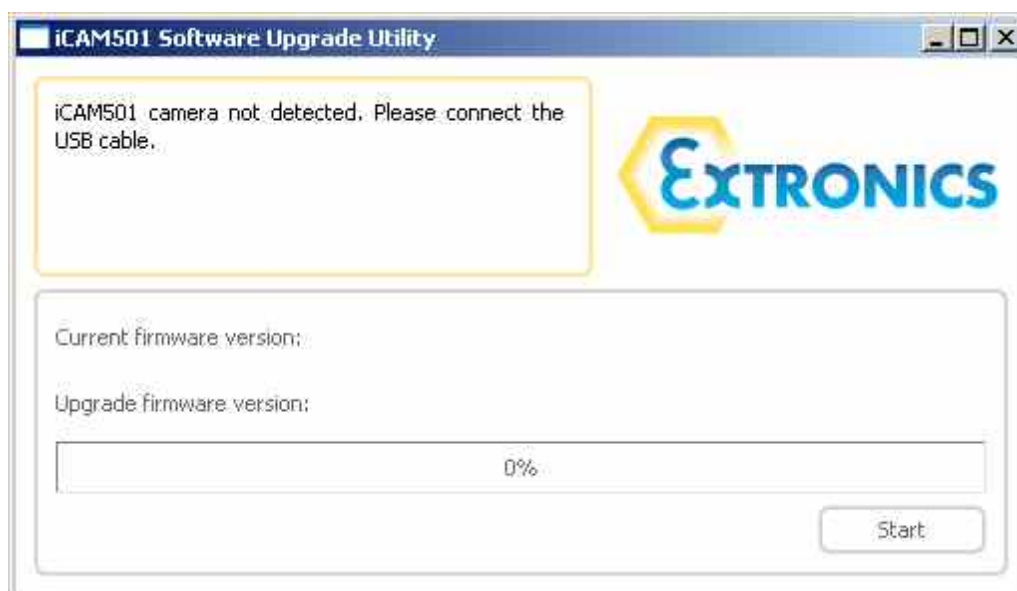
To put the iCAM50x into upgrade mode, power the camera down and then press and hold the 'trigger' and 'flash enable' buttons until the blue LED begins flashing (this should be the only LED lit).

Next, plug a USB cable into the iCAM50x, and into the PC. The upgrade application should then prompt you to press the start button once it has recognised the iCAM50x is connected and in the correct mode. Follow the on-screen instructions.

Once complete, the camera will power itself off. Simply power it back on as normal (press and hold the 'flash enable' and 'record enable' buttons together). It will now be running the upgraded software.

2.12 Error Codes

- If the iCAM50x has all 3 LEDs constantly flashing it means that it is in an unrecoverable state. The only way to get it out of this state is to remove the batteries and then replace them.

Note: If the green status LED continually flashes slowly this does not indicate an error, this means that the batteries are running low and will soon need replacing.

3 Structure and Function

3.1 Intended Purpose Usage

Important	**Before setting the unit to work, read the technical documentation carefully.**

Important	**The latest version of the technical documentation or the corresponding technical supplements is valid in each case.**

The iCAM50x is built using modern components and is extremely reliable in operation; however it must only be used for its intended purpose. Please note that the intended purpose also includes compliance with the instructions issued by the manufacturer for installation, setting up and service.

Any other use is regarded as conflicting with the intended purpose. The manufacturer is not liable for any subsequent damage resulting from such inadmissible use. The user bears the sole risk in such cases.

3.2 Transportation and Storage

All iCAM50x devices must be so transported and stored so that they are not subjected to any excessive mechanical or environmental stresses.

3.3 Authorized Persons

Only persons trained for the purpose are authorized to handle the iCAM50x; they must be familiar with the unit and must be aware of the regulation and provisions required for explosion protection as well as the relevant accident prevention regulations.

3.4 Cleaning and Maintenance

The iCAM50x and all its components require no maintenance. All work on the iCAM50x by personnel who are not expressly qualified for such activities will cause the Ex approval and the guarantee to become void.

3.5 Safety Precautions

Important	**For the installation, maintenance and cleaning of the units, it is absolutely necessary to observe the applicable regulations and provisions concerned with explosion protection (EN 60079-0, EN 60079-14) as well as the Accident Prevention Regulations.**

3.6 Cleaning and Maintenance Intervals

The cleaning intervals depend on the environment where the system is installed.

3.7 Aggressive substances and environments

The iCAM50x is not designed to come into contact with aggressive substances or environments, please be aware that additional protection may be required.

3.8 Exposure to external stresses

The iCAM50x is not designed to be subjected to excessive stresses e.g. vibration, heat, impact. Additional protection is required to protect against these external stresses.

The iCAM50x will require additional protection if it is used in a location where it may be subjected to damage.

4 Technical Data

4.1 iCAM501U

Certification Number	ITS09ATEX26868X, IECEx ITS 09.0027X
ATEX Certification (Units dated before 18th July 2013)	II 1 G Ex ia IIB T4 Ga, II 2 G Ex ia IIC T4 Gb, -20°C ≤Ta≤ +60°C I M1 Ex ia I Ma 0°C ≤Ta≤ +60°C
IECEx Certification (Units dated before 18th July 2013)	II 1 G Ex ia IIB T4 Ga, II 2 G Ex ia IIC T4 Gb, -20°C ≤Ta≤ +60°C Ex ia I Ma 0°C ≤Ta≤ +60°C
ATEX Certification (Units dated after 18th July 2013)	II 1 G Ex ia IIB T4/T3 Ga, II 2 G Ex ia IIC T4/T3 Gb, -20°C ≤Ta≤ +60°C I M1 Ex ia I Ma 0°C ≤Ta≤ +60°C
IECEx Certification (Units dated after 18th July 2013)	II 1 G Ex ia IIB T4/T3 Ga, II 2 G Ex ia IIC T4/T3 Gb, -20°C ≤Ta≤ +60°C Ex ia I Ma 0°C ≤Ta≤ +60°C
FM Certification	Intrinsically Safe for Class 1, Division 1, Groups A,B,C,D T4/T3C -20°C≤Ta≤55/50°C (USA and Canada)
Compliance	EMC: EN 55022 1998 class B, EN 55024 1999 LV: EN 60950 2002 FCC: FCC: Class A device, compliance through verification route
Dimensions	132mm x 32mm x 22mm (5.20″ x 1.26″ x 0.87″)
IP Rating	IP65
Operating Temperature	Group II -20°C to +60°C / Group I 0°C to +60°C
Weight	Approx. 200g including batteries
Housing	Injection moulded anti-static plastic housing
Relative humidity	95% RH non condensing
Power	2 x Alkaline AA batteries, refer to ATEX/FM Certificate for details on range of approved batteries. Batteries may not be carried or changed in Group I hazardous areas.
Memory	On board 1Gbyte NAND Flash (holds approx. 5,000 JPEG images without any audio recording and additional 960Kbytes per min for audio)
Image	3.1 Mega-Pixel (2048 x 1536 resolution)
Lens	Fixed focus 1/4″ format lens in plastic holder
Focal Distance	30 cm to infinity
View Finder	Two element optical view finder
Power Modes	Operate and auto power-down (after 3 mins)
Battery Life	Up to 800 shots without flash and up to 150 shots with flash taken one after the other. 310 shots as per the CIPA DC-002 standard (mixed mode shots with and without flash) Note it is very difficult to be precise about exact numbers as there are many factors that can influence this such as the ambient temperature, how long the camera is powered up, number of voice recordings made and the number and length of time it is connected to a PC for transferring picture and voice data.
Connectivity	USB 1.1 via mini-USB socket for use in the safe area only. Certified for direct connection to a PC without requiring an external protection barrier
OS Support	PTP imaging device in Windows XP/Vista/7 and most versions of Linux. USB firmware upgrade utility for Windows XP/Vista/7 only.
Flash	4 LED flash giving 131 lux.seconds of energy at 67ms exposure
Audio recording format	wav
Image format	jpeg
Time and Date	Time and date stamping of stored images and filenames Time and date set via Picture Transfer Protocol (PTP) automatically

4.2   iCAM502

Certification Number	ITS09ATEX26868X, IECEx ITS 09.0027X
ATEX Certification	II 1 G Ex ia IIB T4/T3 Ga, II 2 G Ex ia IIC T4/T3 Gb, -20°C ≤Ta≤ +60°C I M1 Ex ia I Ma 0°C ≤Ta≤ +60°C
IECEx Certification	II 1 G Ex ia IIB T4/T3 Ga, II 2 G Ex ia IIC T4/T3 Gb, -20°C ≤Ta≤ +60°C Ex ia I Ma 0°C ≤Ta≤ +60°C
FM Certification (Units dated after 18th July 2013)	Intrinsically Safe for Class 1, Division 1, Groups A,B,C,D T4/T3C -20°C≤Ta≤55/50°C (USA and Canada)
Compliance	EMC: EN 55022 1998 class B, EN 55024 1999 LV: EN 60950 2002 FCC: FCC: Class A device, compliance through verification route
Dimensions	132mm x 32mm x 22mm (5.20″ x 1.26″ x 0.87″)
IP Rating	IP65
Operating Temperature	Group II -20°C to +60°C / Group I 0°C to +60°C
Weight	Approx. 200g including batteries
Housing	Injection moulded anti-static plastic housing, supplied with antistatic silicone rubber boot for additional shock protection
Relative humidity	95% RH non condensing
Power	2 x Alkaline AA batteries, refer to ATEX Certificate for details on range of approved batteries. Batteries may not be carried or changed in Group I hazardous areas.
Memory	On board 1Gbyte NAND Flash (holds approx. 5,000 JPEG images without any audio recording and additional 960Kbytes per min for audio)
Image	3.1 Mega-Pixel (2048 x 1536 resolution)
Lens	Autofocus lens, effective focal length 3.39mm, F2.8, 68° diagonal field of view
Focal Distance	5cm to infinity
View Finder	Two element optical view finder
Power Modes	Operate and auto power-down (after 3 mins)
Battery Life	Up to 600 shots without flash and up to 100 shots with flash taken one after the other. 170 shots as per the CIPA DC-002 standard (mixed mode shots with and without flash) Note it is very difficult to be precise about exact numbers as there are many factors that can influence this such as the ambient temperature, how long the camera is powered up, number of voice recordings made and the number and length of time it is connected to a PC for transferring picture and voice data.
Connectivity	USB 1.1 via mini-USB socket for use in the safe area only. Certified for direct connection to a PC without requiring an external protection barrier
OS Support	PTP imaging device in Windows XP/Vista/7 and most versions of Linux. USB firmware upgrade utility for Windows XP/Vista/7 only.
Flash	4 LED flash giving 131 lux.seconds of energy at 67ms exposure
Audio recording format	wav
Image format	jpeg
Time and Date	Time and date stamping of stored images and filenames Time and date set via Picture Transfer Protocol (PTP) automatically

5 Warranty Information

The Customer shall carry out a thorough inspection of the delivered project or equipment with 21 days of delivery and shall give immediate written notification to the Company of any omissions, defects or faults.

The Company warrants that the project or equipment delivered shall accord with the Quotation or Pricing Schedule and related Company specifications, but it does not warrant its fitness for any other purpose.

Extronics will make good, by repair or at Extronics option by the supply of a replacement, defects which, under proper use in accordance with specifications and manufacturer's instructions, appear in the goods within a period of twelve calendar months after the goods have been delivered and arise solely from faulty design, materials or workmanship, provided always that defective parts have been returned to Extronics if Extronics shall have so required.

The warranty of any goods is based upon a return to Extronics factory (Return to Base Warranty) which will be at the Customers cost. The repaired or new parts will be delivered by Extronics carriage paid. If you allege that goods are totally unfit for their purpose they must be returned within 7 days of receipt. Site Warranty is expressly excluded from these terms and conditions unless agreement is made in writing between the parties.

Extronics liability under this clause shall be in lieu of any warranty or condition implied by law as to the quality or fitness for any particular purpose of the goods, and save as provided in this clause Extronics shall not be under any liability, whether in contract, or otherwise, in respect of defects in goods delivered or for any injury other (than personal injury caused by Extronics negligence as defined in Section 1 of the Unfair Contract Terms Act, 1977), damage or loss resulting from such defects or from any work done in connection therewith, provided however that nothing in this clause shall operate to exclude any warranty or condition implied by law as to the quality of the goods in the event that the goods when sold by you or when sold by any person or persons to whom you may sell the goods shall become the subject of a consumer sale as defined in the Supply of Goods (Implied Terms) Act, 1973 except that any claim under such warranty or condition shall have arisen from any act or omission by you or by any person or persons selling the goods by way of a consumer sale.

6 Certification

EXTRONICS

EU Declaration of Conformity

Extronics Ltd, 1 Dalton Way, Midpoint 18, Middlewich, Cheshire CW10 0HU, UK

Equipment Type: **iCAM501U and iCAM502**

This declaration is issued under the sole responsibility of the manufacturer

Directive 2014/34/EU Equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)

Provisions of the directive fulfilled by the equipment:

Ⓤ **II 1 G Ex ia IIB T4/T3 Ga   -20ºC ≤ Ta ≤ 60ºC**
Ⓤ **II 2 G Ex ia IIC T4/T3 Gb   -20ºC ≤ Ta ≤ 60ºC**
Ⓤ **I M1 Ex ia I Ma   0ºC ≤ Ta ≤ 60ºC**

Notified Body **Intertek, 0359, Leatherhead, UK** performed EC-Type Examination and issued the EC-Type Examination certificate.

EC-Type Examination Certificate: **ITS 09ATEX 26868X Issue 5 Dated 14th April 2014**

Notified Body for Production: **SIRA, 0518**

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation.

Harmonised Standards used:

EN 60079-26:2007	Electrical apparatus for potentially explosive gas atmospheres – Equipment with equipment protection level (EPL) Ga
EN 50303:2000	Group I, Category M1 equipment intended to remain functional in atmospheres endangered by firedamp and/or coal dust

Other Standards and Specifications used:

EN 60079-0:2009	Electrical apparatus for potentially explosive gas atmospheres – General requirements (A review against EN60079-0:2012, which is harmonised, shows no significant changes relevant to this equipment so EN 60079-11:2007 continues to represent "State of the Art")
EN 60079-11:2007	Electrical apparatus for potentially explosive gas atmospheres – Equipment protection by intrinsic safety 'i' (A review against EN60079-11:2012, which is harmonised, shows no significant changes relevant to this equipment so EN 60079-11:2007 continues to represent "State of the Art")

Directive 2014/30/EU EMC Directive

Tested to EC Directive 2004/108/EC, Test Date: 29th January 2010

EXTRONICS

Standards used:

EN55022:2006 (+A1:2007)	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (A review against EN54022:2010, which is harmonised, shows no significant changes relevant to this equipment so EN55022:2010 (+A1:2007) continues to represent "State of the Art")
EN55024:1998 (+A2:2003)	Information technology equipment - Immunity characteristics - Limits and methods of measurement (A review against EN54024:2010, which is harmonised, shows no significant changes relevant to this equipment so EN55024:1998 continues to represent "State of the Art")

Directive 2014/35/EU Low Voltage Directive

Assessed to EC Directive 2006/95/EC, Assessment date: 12th February 2010

Harmonised Standards Used:

EN 60950-1:2006	Information Technology Equipment - Safety General Requirements

Directive 2011/65/EU Restriction of the use of certain hazardous substances (RoHS) Compliant

For and on behalf of Extronics Ltd, I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives.

Signed:

Nick Saunders
Operations Manager
Date: 20th April 2016

6.1 iCAM501U and iCAM502 USA Class 1 Division 1 Certificate of Compliance

(For all iCAM501U units, iCAM502 units dated after 18th July 2013 only)

FM Approvals®
Member of the FM Global Group

FM Approvals
1151 Boston Providence Turnpike
P.O. Box 9102 Norwood, MA 02062 USA
T: **781 762 4300** F: 781-762-9375 www.fmapprovals.com

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

iCAM501U Digital Camera
IS / I / 1 / ABCD - 334417

Special Condition for use;
1. *Must be used with Battery specified in the Operations Manual 331684.*
2. *Temperature code is T4, Ta=-20°C to 55°C with Duracell Plus or Procell MN1500 batteries or T3C, Ta=-20°C to 50°C with Duracell Procell PC1500 or Energizer E91 batteries.*

iCAM502 Digital Camera
IS / I / 1 / ABCD – 334416

Special Condition for use;
1. *Must be used with Battery specified in the Operations Manual 331684.*
2. *Temperature code is T4, Ta=-20°C to 55°C with Duracell Plus or Procell MN1500 batteries or T3C, Ta=-20°C to 50°C with Duracell Procell PC1500 or Energizer E91 batteries.*

Equipment Ratings:

Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D hazardous (classified) locations.

FM Approved for:

Extronics Ltd
Cheshire, UK

To verify the availability of the Approved product, please refer to www.approvalguide.com
FM Approvals HLC 5/13   3042108
Page 1 of 2

FM Approvals®
Member of the FM Global Group

This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	2011
Class 3610	2010
Class 3810	2005

Original Project ID: 3042108   Approval Granted: December 7, 2011

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3048452	July 12, 2013		

FM Approvals LLC

Robert L. Martell Jr.
Assistant Vice President

July 12, 2013
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

6.2 iCAM501U and iCAM502 Canadian Class 1 Division 1 Certificate of Compliance

(For all iCAM501U units, iCAM502 units dated after 18th July 2013 only)

FM Approvals

FM Approvals
1151 Boston Providence Turnpike
P.O. Box 9102 Norwood, MA 02062 USA
T: **781 762 4300** F: 781-762-9375 www.fmapprovals.com

CERTIFICATE OF COMPLIANCE

HAZARDOUS LOCATION ELECTRICAL EQUIPMENT
PER CANADIAN REQUIREMENTS

This certificate is issued for the following equipment:

iCAM501U Digital Camera
IS / I / 1 / ABCD - 334417

Special Condition for use;
1. *Must be used with Battery specified in the Operations Manual 331684.*
2. *Temperature code is T4, Ta=-20°C to 55°C with Duracell Plus or Procell MN1500 batteries or T3C, Ta=-20°C to 50°C with Duracell Procell PC1500 or Energizer E91 batteries.*

iCAM502 Digital Camera
IS / I / 1 / ABCD – 334416

Special Condition for use;
1. *Must be used with Battery specified in the Operations Manual 331684.*
2. *Temperature code is T4, Ta=-20°C to 55°C with Duracell Plus or Procell MN1500 batteries or T3C, Ta=-20°C to 50°C with Duracell Procell PC1500 or Energizer E91 batteries.*

Equipment Ratings:

Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D hazardous locations.

FM Approved for:

Extronics Ltd
Cheshire, UK

To verify the availability of the Approved product, please refer to www.approvalguide.com

FM Approvals HLC 5/13   3042108C
                                                     Page 1 of 2

FM Approvals®

Member of the FM Global Group

This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:
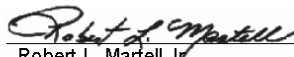
C22.2 No. 157	2006
CSA C22.2 No. 1010.1	2004

Original Project ID: 3042108C   Approval Granted: December 7, 2011

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3048452	July 12, 2013		

FM Approvals LLC

_____
Robert L. Martell Jr.
Assistant Vice President

July 12, 2013
_____
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

6.3 ATEX / IECEx Certificates

Please refer to Extronics website for all current product approval certificates, or email
info@extronics.com

7 Revision History

Revision	1.0	2.0	2.1	
Description	Replaces 334392_03, updated D of C	Updated DoC	Updated DoC	
Date	28/05/14	21/05/2015	18/04/2016	
Author	B.Seaby	AR	PR	
Approved by (signature)				