e2v

e2v technologies

ARGUS® *3*

Firefighters' Solid-State Through Smoke Vision System

User's Manual and Warranty Terms

C E

ARGUS ®*3*
THERMAL IMAGING CAMERA
and CHARGER/BATTERY PACKS

SAFETY NOTES

Please read before use

⚠ This product is an aid to fire and rescue operations in smoke and darkness. It is not intended as a replacement for standard firefighting techniques. Users must ensure that all established procedures are followed.

⚠ This equipment is not certified as intrinsically safe and therefore must not be operated in flammable or explosive atmospheres.

Neglecting the above may result in injury or death.

An auto-iris adjusts sensitivity allowing very hot scenes to be viewed. This circuitry also protects the camera from damage.

To avoid damage:

► The camera should be switched on before entering a fire situation and remain on until after exit.

► When switched off, the camera should not be directed towards very hot objects, e.g. the sun. We recommend that it is stored in the supplied case or storage mount.

WARNINGS indicate a hazard. Failure to appreciate the hazard could result in personal injury or death. Do not proceed until the hazard is understood.

CAUTIONS indicate a hazard. Failure to appreciate the hazard could result in severe damage to the unit. Do not proceed until the hazard is understood.

Notes provide useful information.

WARNINGS

⚡ Electrical hazards

Do not remove the cover of the charger, or disassemble the charger power lead or rechargeable pack. There are no user serviceable parts within the charger, charger lead or the rechargeable pack.

⚠ Charger misuse

The charger must only be used for the charging of rechargeable packs; do not insert any other item into the charger. The charger must not be used to charge primary cells; the charger will not accept the primary cell pack. Do not use a damaged charger. Do not attempt to charge damaged packs.

⚠ Disposal

The Ni-MH cells contained within the pack must be disposed of in accordance with local regulations. Do not incinerate. Do not attempt to charge damaged packs.

⚠ Environmental

The charger must not be subjected to water spray, rain or immersion.

⚠ CAUTION

The Camera and Rechargeable Battery System are despatched from e2v technologies in a safe condition. Any unauthorised modifications may compromise safety and invalidate the warranty. The Camera and Rechargeable Battery System are designed to be safe when used in accordance with the instructions provided.

e2v technologies does not accept responsibility for damage or injury resulting from failure to follow the instructions provided.

All matters arising which relate to the safety of products should be reported immediately, in writing, giving full details to The Product Safety Officer at e2v technologies.

NOTE

The Argus®3 BST thermal image camera contains an export-controlled component and may not be shipped to another country without the prior approval of the US Government, which should be requested from e2v technologies.

Introduction

ARGUS®*3* Thermal Imager

The Argus®3 thermal imager is brought to you by e2v technologies, the world leader in through smoke vision systems.

e2v technologies, with over 18 years experience in firefighters' thermal imaging, continues to produce high quality, affordable systems designed exclusively for the fire and rescue services.

Argus®3 uses the latest high resolution, solid-state FPA detector or microbolometer technology to provide superb quality images under the most arduous conditions while retaining the class-leading ergonomics of the previous Argus® systems.

Through the proper use of this Argus®3 system, the user will be able to:

- See through dense smoke and darkness.
- Detect and display the relative temperatures of objects within the scene.
- Locate the seat and spread of the fire.
- Move swiftly in search and rescue of casualties.
- See in zero visibility conditions.
- Significantly improve safety and mobility.

Argus®3 is designed to withstand the high temperatures, knocks and driving spray often encountered in the firefighting environment.

Argus®3 has also been designed with the following features:

- Capture of 26 images.
- Time and date.
- 2x zoom.
- Ambient temperature measurement.
- Choice of 8 colour palettes.
- Spot temperature (optional).
- Internal video transmitter (optional).

This manual contains information covering operation of the system and operating techniques, user maintenance and care of the product, complete with a full technical specification.

Contents

1 Camera

1.1 GETTING STARTED

- In the case with this manual you will find the camera, a pair of handles, a neckstrap, remote control, two rechargeable battery packs, battery charger with mains and DC leads, two AA battery packs, customer software and data lead.

- Check that the rechargeable batteries are fully charged before use and the battery packs contain LR6 type batteries (if supplied). Open battery door and insert the battery pack as shown. It will fit in either rotation. Close the door.

- Turn on the unit using the middle RED button on the rear. A RED light will be illuminated in the position shown. A long (3 second) press is required to switch the camera off.

- After switch-on and for approximately 10 seconds, a splash screen will be displayed on the camera screen while the system performs a self-test routine. This splash screen is customer configurable – see section 5.

- After 10 to 20 seconds (depending on ambient temperature and sensor type) the thermal image, with battery status display, time and date and ambient temperature, will appear. If spot temperature option is included, the sample window and spot temperature will also appear.

1.2   DISPLAY GRAPHICS

The camera is equipped with an advanced microprocessor based control and user warning system. In addition to controlling the automatic operation of the camera to ensure the best possible picture at all times, the control system provides graphics on the display to alert the user to certain conditions as follows:

● Battery Status

The battery status indicator is always visible at the lower left side of the display, except during the start up/self-test routine. See Charger and Battery section for operation details.

● Over-temperature Warning

As the circuitry within the camera approaches its maximum designed operating temperature, a warning symbol in the shape of a thermometer will appear to the right of the battery status indicator. The camera will continue to operate at this temperature but the user may see some degradation of the image quality.

If the user ignores this warning and continues to operate the camera in very high temperatures, a flashing temperature warning statement will appear on the screen.

When the temperature warning statement is present, the camera is very close to its absolute operating limit and the image will start to degrade considerably. The user must remove the unit from the high ambient temperature at this time; failure to comply may result in permanent damage to the unit.

- General System Failure Warning ⚠

As part of the operation of the system, the microprocessor monitors certain functions and displays an internationally recognised warning symbol if it detects a fault. The warning, which takes the form of an exclamation mark within a triangle, will appear to the right of the battery status indicator (and to the right of the temperature warning if this is active). The warning will appear if any of the following faults are detected:

High humidity within the sealed case assembly.

> This will occur if the plastics or the case seal are damaged and allowing moisture into the camera.

Failure of the lens iris assembly

> This warning symbol may appear briefly during normal operation, but the camera must be returned to an authorised service centre or the factory if the warning symbol remains on.

Failure to act upon this level of warning may result in serious damage to the system and may invalidate the warranty.

- Zoom Symbol

The zoom symbol indicates when the 2x zoom function is activated. This will appear to the right of the battery status indicator.

- Image Capture Symbol

The image capture symbol appears for a short time over the battery status indicator after the image capture button has been pressed. The screen will also show which image number out of 26 has been captured.

- Transmitter ON/Channel Number Symbol

When the transmitter is turned on (if fitted), the transmitter ON/channel number symbol will appear to the right of the battery status indicator.

1.3   OPERATING NOTES

● Interpreting The Image - Relative Temperatures

The image displayed is simply a black and white picture of the infrared energy entering the lens. The camera displays relative temperature differences between individual objects and their surroundings, irrespective of overall ambient temperature.

The camera is set up to display objects at various shades, from black for cooler items to white for hotter bodies, i.e. in a room at 20 °C a cold drink would appear black whilst a hot radiator would appear white. In a room at 250 °C, however, it is possible that the same hot radiator may appear darker than, for example, burning materials.

● Identification of Fire and Hotspots

The camera will represent zones of very high temperature as white zones within the picture. Very small fires or smouldering material will cause the automatic iris to close down slightly, but the image of surrounding objects will remain clearly visible.

● Hidden Fires

It is possible that fires may be burning or smouldering behind doors, in ducting or indeed in wall or floor cavities. In such circumstances, the operator should look for areas which appear whiter when compared with the surroundings. For example, a fire behind a door will cause the door to appear whiter against the background. Similarly, a white area on an otherwise dark wall could indicate the area of fire behind the masonry.

- Search for Persons and Objects

The camera is not restricted to locating fires. In many cases, the firefighter will be using the camera in a search for casualties, to seek out dangerous items such as fuel tanks or gas cylinders and also as an aid to navigation through unknown premises.

- Image Clarity

The sharpness and clarity of the image provided is related to the temperature of the scene and objects in view. A cold room provides little infrared energy and less detail is detected than in a warm environment where objects give off significant energy. In general, the warmer the scene, the more thermal contrast and hence greater detail in the picture.

- Heat Layers in Closed Spaces

In a major fire, a layer of hot gases may build up in the upper region of the closed space. Attempting to use the camera in this hot layer will cause the image to become featureless. By bringing the camera down beneath this layer, the unit is able to provide the firefighter with a clearer picture of the scene ahead.

- Windows and Polished Surfaces

Glass is not transparent to long wavelength infrared energy and it is not possible for the operator to use the camera to look through a window. A white window would indicate that the window itself is relatively warm and may be being heated by a fire behind it. Just as we see reflections in glass under normal circumstances, it is possible that the camera can detect infrared reflections in glass, mirrors and polished or painted surfaces. Care must be taken to ensure that the image seen is not simply a reflection. Experience will give the operator added confidence.

- Control of Water Streams/Jets

When viewed through the camera, water streams from hose reels will appear black against the background scene. The control and aim of water flow can be monitored by viewing the flow and its effect on the fire through the camera. It may be necessary, if employing a water wall, to drop the wall momentarily to view the effects of the extinguishing stream.

- Smoke Types

The camera will provide vision through all types of smoke and steam.

- Lens Cleaning During Operation

The camera lens, like the BA visor, may become obscured during use. The lens may be cleaned with a glove or cloth if necessary.

2 Standard Functions

2.1   IMAGE CAPTURE

- Up to 26 images can be captured and stored in the camera. These images can then be viewed or deleted using the remote control or software provided (see section 4 for details of remote control). Using the software provided, captured images can be downloaded to a suitable laptop/PC in .bmp format.

- To capture an image press the left-hand button. The image capture symbol will appear over the battery status indicator and the number of the image out of 26 will be displayed on the screen.

- If the image capture button is pressed and the camera has 26 images stored, a warning 'FULL' will appear. Before further images can be stored, images will have to be saved to a laptop/PC or deleted using the remote control or software provided.

2.2   ZOOM

- The zoom function is operated by a short press on the right-hand button and is indicated by the magnifying glass icon on the screen.

- Where the temperature measurement option is combined with zoom, the sample window is also expanded to suit.

2.3   TIME AND DATE

- Time and date is displayed at the top of the screen in the format:

    hh:mm   dd/mm/yy

- This is also present on the external video feed for recording directly or via the Video Transmission systems and will be shown on any image captured.

- The date and time can be adjusted using the remote control or software provided.

2.4   AMBIENT TEMPERATURE

- The ambient temperature sensor is fitted to the front of the camera and the ambient temperature is displayed on the video.

- The range for ambient temperature measurement is $-17\ °C$ (1.4 °F) to 150 °C (302 °F). If ambient temperature measurement is not required, it can be turned off using the software and the readout display will be removed from the video.

3 Optional Functions

3.1 SPOT TEMPERATURE MEASUREMENT

- The addition of a sensor to the camera allows the operator to view the average scene temperature (within a defined area). The temperature is displayed as an overlay on the camera video.

- This system is intended to give the operator the ability to detect possible hazards such as hot gas bottles or tanks. The camera can be configured to give a reading in °C or °F by using the user software (see section 5).

- Scene temperatures between 0 °C (32 °F) and 500 °C (932 °F) can be displayed. If the temperature lies outside this range a > or < symbol appears before the reading indicating that it is outside the possible range.

Note: If the object in the scene does not fully fill the sample window, then a false reading may be obtained. Care should be taken not to cover up the sensor window (with a hand for example) when using this system.

3.2 TRANSMITTER

The transmitter is housed inside the camera and is powered by the camera battery. It is designed to allow remote viewing of a thermal image from the camera. To switch on the transmitter, press and hold the transmitter ON button at the rear of the camera. When the transmitter is turned on, the transmitter on/ channel number symbol will appear to the right of the battery status indicator.

The performance of the system will allow a transmitting range of greater than 1 km (0.6 mile) line of sight. This will be reduced when used inside buildings and will vary depending on the construction of the building and how many walls etc. are between the camera and the receiver.

Due to the relatively low power of the system and the high frequency used (1.4 or 2.4 GHz) it is normal for the received picture to break up momentarily when the camera is moved. This break-up is caused by multi-pathing of the signal as it bounces off objects and people between the camera and the receiver.

The transmitter is available in two frequencies, 1.4 GHz and 2.4 GHz, depending on the local licensing regulations of the country of use.

- 1.4 GHz Transmitter
  The transmitter is supplied as a single-channel 200 mW system and is MPT1349 approved for use in the UK only. The transmitter should be used in conjunction with the Receiver Kit DAS548076AA or the Receiver Case.
  Note: Any modifications to or replacements of the Argus®3 transmitting antenna will invalidate any and all regulatory approvals obtained by e2v technologies, thus rendering the use of the telemetry version of the Argus®3 camera in breach of regulation and therefore illegal. e2v technologies will in no way be responsible for any such modifications or replacements nor the consequences of these nor any resulting illegality. Any such modifications or replacements will invalidate the warranty given by e2v technologies for the product.

- 2.4 GHz Transmitter
  The transmitter is supplied as a two-channel 300 mW system and is FCC part 90 approved for use in the US. The transmitter should be used in conjunction with the Receiver Kit DAS547874AA or the Receiver Case.

3.3 RECEIVER KITS

Both the receiver kits provide a standard 1.0 V video output and are designed for use with a separate video monitor (not supplied). The receiver requires 12 V dc power, either from a vehicle supply or the mains adaptor supplied. The antenna can be mounted on a pole if required and is connected to the receiver by a 3 m (10 ft) long cable.

Mount the antenna in a suitable location, so that the front of the unit is directed towards the camera is deployed. Connect the antenna to the receiver using the cable provided. Connect the DC power to the receiver using the mains adaptor provided. Connect the receiver to a suitable video monitor using the phono or BNC connector located on the rear of the unit.

- Receiver kits for 1.4GHz transmitters (DAS548076AA)
  The stand-alone receiver is single-channel and is supplied complete with high gain antenna (DAS549406AA). Also supllied is an antenna to receiver cable (DAS548241AA) and mains adaptor unit (DAS548235AA).

- Receiver kits for 2.4GHz transmitters (DAS547874AA)
  The stand-alone receiver has two channels and is supplied complete with high gain antenna (DAS547875AA). Also supplied is an antenna to receiver cable (DAS548236AA) and mains adaptor unit (DAS548235AA).

4 Remote Control Functions

To access the remote control functions, press the RED button on the remote. The screen will show the first of the list of 8 options. These are:

Brightness Adjustment,

Contrast Adjustment,

Colour Adjustment,

Transmitter Channel,

Colour Options,

White Hot or Black Hot,

Stored Image: Review and Deletion,

Time and Date Setting.

To access any of these functions press the **menu** ▲ or **menu** ▼ buttons until the desired option is displayed. Once the desired option has been selected, each option has further action (see below). Pressing the RED button again will set any changes required and leave the option list or, pressing the **menu** ▲ or **menu** ▼ buttons, another option can be selected.

- Brightness, Contrast and Colour Adjustment
  By pressing the + or − buttons, the brightness, contrast and colour of the LCD screen is increased or reduced.

- Transmitter Channel
  By pressing the + or − buttons, the transmitter channel is selected.

- Colour Options
  By pressing the + or − buttons, the colour options can be scrolled through.
  These are:

  Grey Scale   Half Colour

  Green Scale   Full Colour 1

  Red Spot   Full Colour 2

  Soft Red Spot   Full Colour 3

- White Hot or Black Hot
  By pressing the + or − buttons, white hot or black hot can be selected.

- Stored Image: Review and Deletion
  Review
  By pressing the + or − buttons, the stored images can be scrolled through.
  Deletion
  By pressing the + or − buttons, the stored images can be scrolled through
  until image required to be deleted is selected. Press the delete button twice
  to delete image.

- Time and Date Setting
  Press the **OK** button to enter the time and date settings. Using the **menu ▲**
  or **menu ▼** buttons, scroll through the hours, minutes, days, months and
  years. Adjust each setting as required by using the + or − buttons. Once
  the desired setting has been achieved, scroll to save time and date and press
  OK.

5 Software

Using the camera data port and cable provided, a number of the camera functions can be set, enabled and adjusted by the user from a standard laptop/PC. The software is supplied on CD-ROM in the back of this manual. The software allows the user to:

Download stored images.
Upload splash screens.
Set, enable or disable time and date.
Use, enable or disable the zoom function.
Set, enable or disable temperature display and units.
Set white or black hot and colour options.
Enable or disable the transmitter and select channel (if option is fitted).

To change the camera settings, connect the interface lead 9-way D socket to the laptop/PC serial port. If the PC serial port has 25 pins, an adaptor will be required. Plug the interface lead 5-pin round plug into the camera data port.

● Operating Systems

The Argus®3 customer software supports the following operating systems:

Windows® NT (all versions).
Windows® 2000 service pack 3 or newer.
Windows® XP (all versions).

If the laptop/PC is running Windows® 95, 98 or ME, the Argus®3 software will run and install but can have some problems with older versions. As Microsoft no longer supports these operating systems, e2v technologies cannot provide full support for them.

If the laptop/PC is running Windows® 2000 with an unsupported service pack, visit the Windows® update web page at http://v4.windowsupdate.microsoft.com/en/default.asp. Click on the search button and insert the service pack update required. Follow the on-screen information.

● Installing the Software

Insert the Argus®3 Information CD into the CD drive of the laptop/PC. After a short time the CD will autostart and open up the main page of the Argus®3 Information CD. If the CD does not autostart, the main page can be viewed by opening local file D:\index.htm in a web browser (replace 'D' with the drive letter of the CD-ROM drive if necessary).

To install the software, click 'Install Software' on the main page. This will open the software page; click 'install software'. A box will appear, asking to copy or to run the software from its current location. Click 'run from current location', then click 'OK'. Another box will appear; click 'Yes' to install the software. A box will now appear to update the systems files. When the box disappears, another will pop up; click 'OK' to the installation. Immediately after, there will be a prompt to restart the system before starting a full installation. Click 'Yes' to restart system. Once the restart has been completed, install the software again.

After clicking 'install software' for the second time, click 'OK' to the installation. If the installation is an older version than the current one on the laptop/PC, there may be a prompt to keep any .OCK or .DLL files; click 'Yes'. Click 'OK' to the successful completion to the installation.

The software should now be correctly installed. To run the Argus$^{®}$3 software, click on 'Start', find the Argus$^{®}$3 software title under Programs, then click the Argus$^{®}$3 customer software.

The software can be installed by running D:\setup.exe (replace 'D' with the drive letter for the CD-ROM drive if necessary). Follow the on-screen commands and the above procedure.

Note: e2v technologies is in no way liable for any consequences incurred as a result of use of this software and that this software is used entirely at the user's risk and liability. e2v technologies is excluded for any and all liability arising from any loss, damage or cost arising from the use of this software. By selecting 'OK' the user confirms e2v technologies' exclusion of liability.

● Using the Software

Power up the camera and wait until a thermal image has appeared on the camera screen. Connect the data cable between the camera and laptop/PC. Start the customer sofware and wait until the test software front screen opens. Click **connect to camera**. If the connection to the camera has been successful, **connect to camera** will disappear and three options will be available:

Set Time and Date.

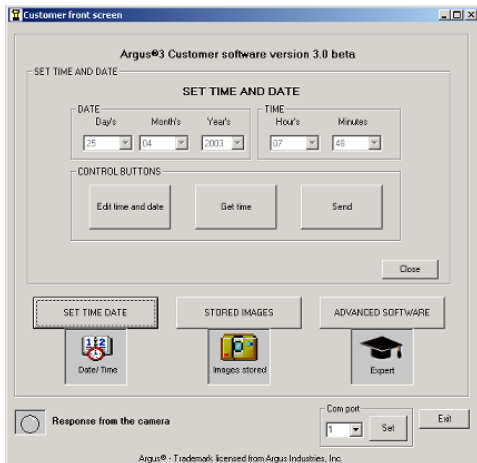Stored Images.

Advanced Software.

If the connection to the camera is unsuccessful, exit from the software by clicking **exit**. Start the customer sofware and wait until the test software front screen opens. Using the **com port** drop-down menu, set the com port to 2 and click **set**. Click **connect to camera**. If the connection to the camera is still unsuccessful, check all the leads are firmly home.

● Set Time and Date

Open up the software and click **set time and date**. A new window will open. This area allows the user to set the time and date. To set the time and date, click **get time from the PC**, then click **send**. This will set the camera to the time and date as per the laptop/PC.

If this time or date is incorrect, click **edit time and date** and from the drop-down menus for hours, minutes, day, month and year select the correct time and date and click **send**.

Once complete, click **close** to return to the software front screen. Click **exit** to close the software.

● Stored Images

Open up the software and click **stored image**. This area allows the end-user to download stored images from the camera.

View Images Frame

This area allows the end-user to view or delete images from the camera.

View Image:

> Click **view image** and the camera will show its first stored image on the LCD screen. To view each image, click **next image** or **previous image** to scroll through each image. Alternatively, from the drop-down menu, select the

number of the image to be viewed. When viewing is complete, click **display scene** to return the camera to its normal operation.

Delete Image:

Select the image to be deleted via View Image (above). Once selected, click **delete image**. That image will be deleted. Alternatively, click **delete all images** to clear all images from the camera. When deletion is complete, click **display scene** to return the camera to its normal operation.

Download Image Frame

This area allows the end-user to retrieve images from the camera.

Select the image to be retrieved via View Image (above). Once selected, click **retrieve image**. The software will show an increasing time elapse bar and the camera screen will blank with the message 'transferring image'. On completion of retrieval, a prompt will appear to inform that the image must be saved.
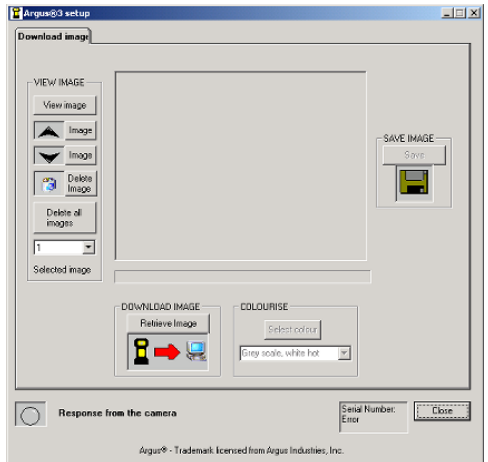
At this point it is advisable to save the image in its grey scale format.

Save Image Frame

This area allows the end-user to save any retrieved images from the camera. To save the image, click **save**. A new window will open. Select the folder the image is to be saved in and click **save**.

Colorise

This area allows the end-user to colorise any retrieved images from the camera. The retrieved image can now be colorised to any of the standard colours of the camera and also shown in black or white hot, by using the drop-down menu.

Once complete, click **close** to return to the software front screen. Click **exit** to close the software.

- Advanced Software

Open up the software and click **advanced software**. There are five options available:

Download Images.
Status Report.
Set-up.
Remote Control.
Start-up Screen.

Download Images Tab

See Stored Images (above) for further information.

Status Report Tab

Open up the software and click the **Status Report** tab. This area allows the end-user to interrogate the camera and enable a fault diagnosis of the camera. Click **get report** and a refreshed status report will be retrieved.

To save the report, click **save report** and a new window will open. Select the folder the report is to be saved in and click **save**.

To print the report, click **print** and a new window will open. Click **print**.

The report can be emailed to the e2v technologies Service Centre. If the laptop/PC has a compatible email facility, click **email report**. This will automatically send the report. If the laptop/PC is not compatible, save the report as above and attach this document to any other type of email. The email address is **argus3.repaircentre@e2vtechnologies.com**. The comments box allows the end-user to add any further information about the camera. This will automatically be saved, printed or emailed with the report.
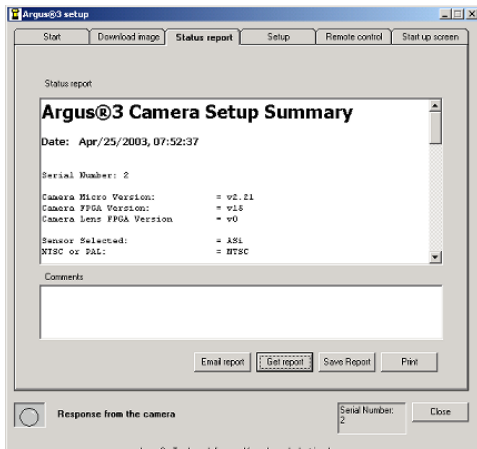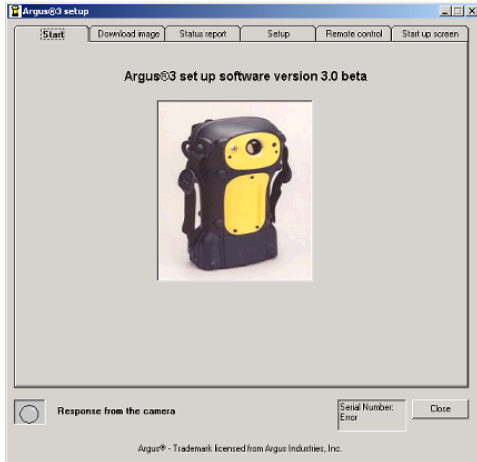
Setup Tab

Open up the software and click the **Setup** tab. This area allows the end-user to enable, disable, select and set up various functions on the camera. When the tab is initially pressed, the settings of the camera attached to the laptop/PC will be shown.
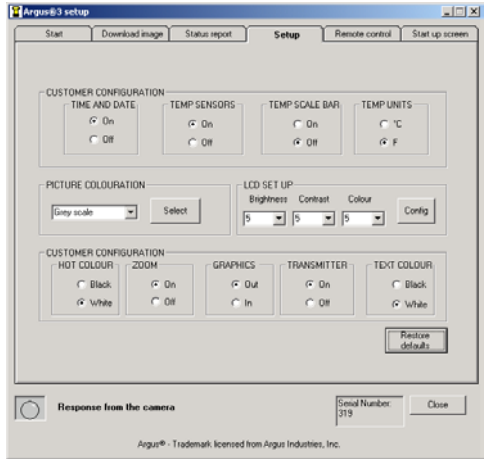
Customer Configuration Frame

These two area allow the end-user to configure various functions of the camera. These are:

Time and date enable/disable; check as required.
Zoom enable/disable; check as required.
Temperature sensors enable/disable; check as required.
Select Celsius or Fahrenheit; check as required.
Select Black or White Hot; check as required.
Temperature Colour Bar enable/disable; check as required.
On-Screen Graphics in or out (see note); check as required.
Transmitter enable/disable; check as required.
Select Text Colour; check as required.

Note: The graphics in/out function is only necessary if the graphics are unable to be seen when using an external monitor.

Picture Colouration Frame

This area allows the user to select the colour option for the camera screen. From the drop-down menu, select the required colouration and click **select**.

LCD Set-up Frame

This area allows the user to select the LCD brightness, contrast and colour levels for the camera screen. From the drop-down menu, select the required level and click **config**.

Factory Default Button

Allows the end-user to restore the camera to its original factory default settings. Alternatively, this operation can be performed as follows:

1. Turn the camera off and place face down on a secure surface.

2. Hold down both grey buttons and switch on the camera holding down all three buttons until "Factory Default Mode" appears on the screen.

3. Release buttons. Check a thermal image is now present.

Remote Control Tab

Open up the software and click the **Remote control** tab. This area allows the end-user to perform various functions of the camera remotely via a laptop/PC.

Zoom In and Out Button:
Allows the end-user to zoom the camera in or out.

Store Picture Button:
Allows the end-user to store an image.
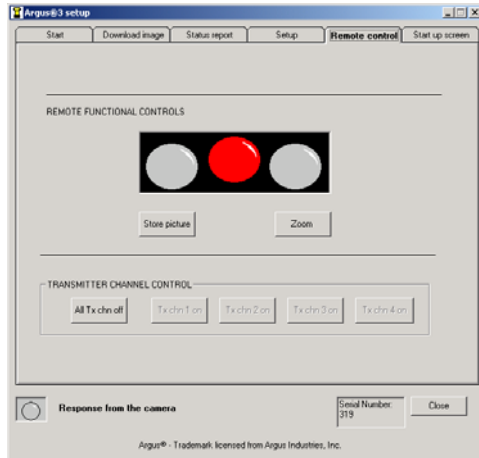
Transmitter Channel Control

This area allows the user to select the transmitter channel and by doing so turns on the transmitter. Only the channels avaliable will be highlighted. To turn off the transmitter, click **all tx chn off**.

Uploading Start-up Screen Tab

Open up the software and click the **Start-up screen** tab. This area allows the user to upload a splash screen of their choice to the camera.

To upload an end-user splash screen, the image to be uploaded must be a 320 x 240 pixel bitmap. Click **open** and a new window will open. Select the folder the image is saved in and click **open**. The selected image will appear in the image window.
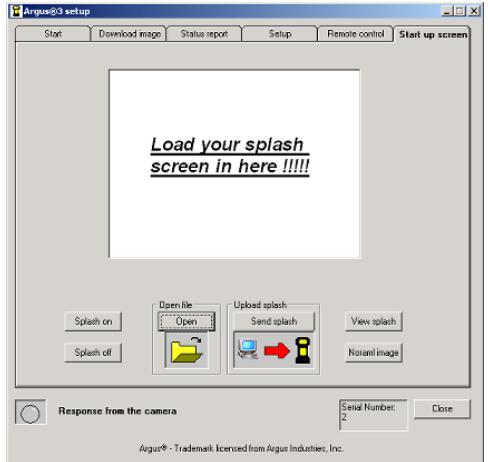
If this is correct, click **send splash**. Once the upload has been completed, turn the camera off and then on again and check the selected image is the splash screen.

If an end-user splash screen is no longer required, click **splash off** to return to the e2v technologies splash screen. Click **splash on** to return to the uploaded splash screen.

To view the splash screen stored in the camera, click **view splash**. Click **normal image** to return to the normal image.

Once complete, click **close** to return to the software front screen. Click **exit** to close the software.

6 Cleaning, Maintenance and Replacement Parts

- Cleaning

After use and prior to stowing, the camera should be cleaned. This is best carried out using a cloth soaked with warm soapy water. **Solvents should not be used. If in doubt, contact your supplier.**

- Maintenance

No routine maintenance is required for the camera. If it is not in regular use, it should be switched on for 10 minutes every month to check correct operation.

- Replacement Parts

Due to the environment in which the camera is used, the user can replace certain parts. If any damage beyond these parts occurs, return the camera to e2v technologies or an authorised repair centre.

Any attempt at repair by unauthorised personnel may cause serious damage and will invalidate the warranty. **THERE ARE NO OTHER USER-SERVICEABLE PARTS**.

Handles (state colour when ordering)
Left Handle:

    DAS701201AA (Blue)

    DAS701201BA (Orange)

    DAS701201CA (Yellow)

Right Handle:

    DAS701202AA (Blue)

    DAS701202BA (Orange)

    DAS701202CA (Yellow)

To replace the handles, remove all screws using a 2 mm hex key. Remove the handles and discard the screws, as replacements will be supplied. Replacement is the reverse of removal.

Bumpers

    Left Bumper: DPP701141AA.

    Right Bumper: DPP701142AA.

The bumpers are supplied without side straps (see below for details). To replace the bumpers, remove the screws using a 2 mm hex key. Remove the crosshead screws, remove the side straps from the bumpers and discard the screws, as replacements will be supplied. Replacement is the reverse of removal.

Side Straps DAS542693AA

To replace the side straps, remove the screws holding the bumpers to the camera using a 2 mm hex key. Remove the crosshead screws and remove the side straps from the bumpers. Replacement is the reverse of removal.

Lens Bezel (state colour when ordering)

    DAS701204AA (Blue)

    DAS701204BA (Orange)

    DAS701204CA (Yellow)

To replace the lens bezel, remove all screws using a 2 mm hex key. Remove the lens bezel and discard the screws, as replacements will be supplied. Replacement is the reverse of removal.

Access Panel (state colour when ordering)

DAS701205AA (Blue)

DAS701205BA (Orange)

DAS701205CA (Yellow)

To replace the access panel, remove all screws using a 2 mm hex key. Remove the access panel and discard the screws, as replacements will be supplied. Replacement is the reverse of removal.

Other spares and accessories.

Neck Strap DAS701207AA

Battery Pack DAS701210AA

Rechargeable Battery Pack E100173

Charger Unit – Country dependent; ask for details

Remote Control DAS702007AA

RS232 Computer Lead DAS546769AA

User Manual and CD-ROM DAS702198AA

Camera Carry Case DAS701420AA

7 Specifications

- Mechanical

Dimensions   .   162 x 271 x 122 mm (W x H x D) nominal (without handles)
300 x 271 x 122 mm (W x H x D) nominal (with handles)
Weight . . . . 2.1 kg nominal (including batteries and handles)
Case material . . . . Radel® R-5100
Lens bezel material   . . . . Radel® R-5100 over-moulded in Santoprene®
Access panel material   . . . Radel® R-5100 over-moulded in Santoprene®
Neck strap . . . . Nomex®
Side straps   . . . . Nomex®

- Electrical

Power supply . . . . integral battery pack
Power consumption   . . . . . 5 W nominal (dependent on options fitted)
Battery   . . . . . . Ni-MH rechargeable pack or 8 AA/LR6 type batteries
Battery life . . . . >2 hours typical continuous operation

- Optical – BST

Sensor   . . . . Barium Strontium Titanate (BST)
Detector type   . . . . focal plane array (FPA)
Pixel count   . . . . 320 x 240
Lens . . . . purposed-designed, three-element germanium lens
Field of view . . . . 50° horizontal
Depth of field   . . . . 1 to 30 metres
Aperture f/1.0
Spectral response . . . . 8 – 14 μm
Iris   . . . . automatic
NETD   . . . . <0.1 °C

- Optical – ASi

Sensor . . . . Amorphous Silicon (ASi)
Detector type . . . . micro-bolometer
Pixel count . . . . 160 x 120
Lens . . . . germanium lens as supplied with detector
Field of view . . . . 50° horizontal
Depth of field . . . . 1 to 30 metres
Aperture f/1.0
Spectral response . . . . 7 – 14 μm
NETD . . . . <0.1 °C

- Environmental

High temperature tolerance . .   the camera will withstand 60 °C (140 °F) for
                    1 hour minimum and 150 °C (302 °F) for 10 minutes
Low temperature tolerance . . . .   rechargeable batteries −10 °C (14 °F)
                                    AA batteries 5 °C (41 °F)
Storage temperature . . . . −10 to +50 °C (14 to 122 °F)
Sealing . . . . dust and water proof to EN 60529, class IP67
Mechanical stability . . . . tested against shock and vibration
Drop . . . . will withstand a drop of 1 metre (3.28 feet)
EMC . . . . as per directive 89/336/EEC

- Other

Viewing . . . . 100 mm (4-inch) full colour LCD
Video output . . . . . BNC plug behind access panel for 75 Ω 1 V video
Image capture . . . . up to 26 images can be captured
Computer connection . . . . via RS232 lead (supplied)
Carrying mode . . . . hand straps fitted, handles and neck strap supplied
Operation . . . . single button on/off, with delayed off
Storage . . . . carrying case for camera, batteries, charger,
                                    neck strap and user manual
Service . . . . Periodic service is not required
Repairs . . . . . by manufacturer or authorised local service centre only

8 Battery and Charger

8.1 BATTERY

The Argus®3 camera is supplied with both rechargeable and primary battery packs. All battery packs provide an output to the battery status bar on the Argus®3 camera. This bar provides a continuous indication of the remaining charge, allowing the firefighter to avoid unpredicted power loss.

With a fully recharged battery, or a battery pack fitted with new batteries, the battery status bar will be at its full status with 5 bars showing. With high quality batteries or the condition of the rechargeable pack, it may remain at this height for some minutes. The number of bars will then progressively decrease as the batteries discharge. When the battery status bar has reached 2 bars, there is approximately one (1) hour of battery life remaining.

When the battery is low, a 'LOW BATTERY' warning will appear over the battery status bar to alert the operator. The time remaining will depend on the type of batteries being used, but will typically be 10 minutes.

Note: Before each BA team enters the fire, it is recommended that the camera is used with a rechargeable battery at full charge or a battery pack fitted with new batteries.

Rechargeable Battery Pack

The Argus®3 uses a readily avaliable camcorder-style Nickel Metal Hydride (Ni-MH) rechargeable battery pack. The type supplied is a Varta V217 6 V 3600 mAh but other variants are avaliable. The rechargeable packs are designed to power an Argus®3 camera for over 2 hours from a full charge, dependent on options fitted. Before using the battery, read the leaflet supplied with this manual.

Note: Disposal of batteries should be in line with their manufacturers' instructions.

Primary Battery Pack

Primary batteries are suitable for ocassional or back-up use. The primary packs are designed to power an Argus®3 camera for over 1.5 hours if fitted with new batteries. The batteries used in the primary battery pack are AA size.

It is recommended that type LR6 batteries be used, as these are essential to achieve the specified battery life. LR6 indicates an alkaline manganese battery, which can supply the power requirements of the Argus®3. Labels such as 'long life' or 'super power' are manufacturers' titles and do not necessarily imply LR6. It recommended that all 8 batteries in a set be changed simultaneously.

The operating life of LR6 batteries varies greatly between manufacturers and is temperature dependent. e2v technologies recommend the use of rechargeable systems at ambient temperatures of 5 °C (41 °F) or less.

WARNING – Rechargeable AA batteries must not be used with this device.

Battery replacement

Open the pack by pressing the two clips inwards and pulling. Remove the old batteries and dispose of them safely. Insert new batteries in the correct orientation shown on the inner carrier. In order to verify the pack is ready for use it may be tried in the camera.

Note: Disposal of batteries should be in line with their manufacturers' instructions.

8.2   BATTERY CHARGER

The Argus®3 uses a readily avaliable camcorder-style Battery Charger. The type supplied is dependent on location, but other variants are avaliable. The battery charger can be powered by either AC mains or 12 V DC and all cables are supplied. Before using the battery charger, read the leaflet supplied with this manual.

9 Warranty Terms

9.1 EXPRESS WARRANTY

e2v Technologies ("e2v") warrants that this product is free from mechanical defects or faulty workmanship for two (2) years from the date of shipment, with the exception that the warranty period for the battery charger and for the rechargeable battery pack is one (1) year from that date, provided it is maintained and used in accordance with e2v's instructions and/or recommendations.

This warranty does not apply to expendable or consumable parts whose normal life expectancy is less than one (1) year. Replacement parts and repairs are warranted for ninety (90) days from the date of shipment.

e2v shall be released from all obligations under this warranty in the event repairs or modifications are made by persons other than its own or authorised service personnel or if the warranty claim results from misuse of the product. No agent, employee or representative of e2v may bind e2v to any affirmation, representation or modification of this warranty concerning the goods sold under this contract.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AND IS STRICTLY LIMITED TO THE TERMS HEREOF. e2v SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

9.2 EXCLUSIVE REMEDY

It is expressly agreed that the Purchaser's sole and exclusive remedy for breach of the above warranty, for any tortious conduct of e2v, or for any other cause of action, shall be the repair and/or replacement, at e2v's option, of any equipment or parts thereof, that after examination by e2v are proven to be defective. Replacement equipment and/or parts will be provided at no cost to the purchaser, F.O.B. e2v's plant. Failure of e2v to successfully repair any non-conforming product shall not cause the remedy established hereby to fail of its essential purpose.

9.3 EXCLUSION OF CONSEQUENTIAL DAMAGES

PURCHASER SPECIFICALLY UNDERSTANDS AND AGREES THAT UNDER NO CIRCUMSTANCES WILL e2v BE LIABLE TO PURCHASER FOR ECONOMIC, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES OF ANY KIND WHATSOEVER INCLUDING, BUT NOT LIMITED TO, LOSS OF ANTICIPATED PROFITS AND ANY OTHER LOSS CAUSED BY REASON OF THE NON-OPERATION OF THE GOODS. THIS EXCLUSION IS APPLICABLE TO CLAIMS FOR BREACH OF WARRANTY, TORTIOUS CONDUCT OR ANY OTHER CAUSE OF ACTION AGAINST e2v.

In the event of a warranty failure, return your camera to your local Argus® sales centre:

USA
The Argus® sales team
e2v technologies inc.
4 Westchester Plaza
Elmsford
NY 10523-1482
Tel (toll free): 1 800 342 5338
Fax: (914) 592 5148
E-mail: argusdirect@e2vtechnologies.com

UK and Rest of the World
The Argus® sales team
e2v technologies
106 Waterhouse Lane
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E-mail: argusdirect@e2vtechnologies.com

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