



thermal imaging from e2v

# THERMAL IMAGING CAMERA SYSTEM

## SAFETY NOTES

Before using this product, the customer shall read and understand all the instructions and warnings. e2v technologies does not accept responsibility for damage or injury resulting from failure to follow the instructions provided.

### WARNINGS:

- The Argus® F-Type Thermal Imaging Camera System is despatched from e2v technologies in a safe condition. Any unauthorised modifications may compromise safety and invalidate the warranty.
- The Argus® F-Type is not certified as intrinsically safe and therefore must not be operated in potentially flammable or explosive atmospheres.
- All users must be trained in the correct operation, functionality and features of the Argus® F-Type before use.
- The Argus® F-Type can only be serviced by authorised personnel. There are no end-user serviceable parts except those described in the maintenance section of this manual.
- **Neglecting the above may result in injury or death.**

### CAUTIONS:

- Never point the camera at a source of extreme temperature, e.g. the sun, as this can damage the detector.
- e2v technologies recommends that the Argus® F-Type is stored in the supplied case or storage mount.
- Failure to respond to the warning symbols that appear on the display may result in damage to the camera and the electronics.
- All matters arising, which relate to the safety of this product, should be reported immediately in writing, giving full details, to the Product Safety Officer at e2v technologies.

### ENVIRONMENTAL:

- e2v technologies declares that the Argus® F-Type Thermal Imaging Camera System complies with EC directive 2002/95/EC (the RoHS Directive) restricting the use of certain hazardous materials in electrical and electronic equipment.
- The Argus® F-Type Thermal Imaging Camera System is classified as Electronic and Electrical Equipment according to directive 2002/96/EC (the WEEE Directive) and should be segregated from domestic waste for disposal. Alternatively, it may be returned to e2v technologies for safe disposal.
- This product does not contain toxic or hazardous substances or elements over the maximum permitted concentration values. Refer to the Argus® F-Type Thermal Image Camera customer information CD for more information.

本产品不含有毒、有害物质或其浓度在允许范围内。详细信息请查阅随附的用户信息光盘



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## INTRODUCTION

The Argus® F-Type is the latest generation of the Argus® Thermal Imaging Camera (TIC) from e2v technologies. With over 25 years experience in thermal imaging, e2v technologies continues to produce high quality, affordable systems designed for heat detection for use with civilian, industrial and military security applications.

The Argus® F-Type has been designed with digital imaging technology for a sharper picture and superior performance and uses the same highly successful Amorphous Silicon (ASi) Microbolometer Detector that is used in the Argus® 4 and which is in use by many of the world's fire brigades.

The Argus® F-Type is simple to operate. It is a robust, self-contained camera, which has fully automatic operation; no control or adjustment is required in use. The Argus® F-Type is a small, lightweight, ergonomic camera and through proper use, the camera can be used for:

- Search and rescue of casualties and fugitives.
- Seeing in zero visibility conditions and significantly improving safety.
- Detecting someone penetrating a border even under the cover of darkness, smoke and various weather conditions.
- Collecting evidence, occupancy evaluation and collision investigation.
- Detecting and displaying the relative temperatures of objects within the scene.

The Argus® F-Type is designed to withstand high temperatures, knocks and harsh environments and has many features that can be customised by the end user. These features include:

- Capture of 100 images with ability to post process from a raw data file.
- Dimmable LCD display.
- X2 and X4 Zoom.
- Direct Temperature Measurement.
- Choice of colour palettes and scene presentation.
- Customisable Start-up Screen.
- Time and Date.
- On screen set-up menu.

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

**Note: The P7250 and P7225 Series of thermal imaging cameras are subject to export controls. An export licence will be required if exported outside the EU.**

# 1. OPERATION AND USE

## 1.1 System Configuration



- |                         |                           |
|-------------------------|---------------------------|
| 1. Rear Bumper          | 5. Battery Release Button |
| 2. Battery              | 6. Side Strap             |
| 3. USB Data Lead Socket | 7. Removable Handle       |
| 4. Front Bumper         |                           |



- |                            |                           |
|----------------------------|---------------------------|
| 1. Date                    | 6. Time                   |
| 2. Spot Temperature Target | 7. Battery Bar            |
| 3. Power LED               | 8. Spot Temperature Value |
| 4. Image Capture Button    | 9. Zoom Button            |
| 5. ON/OFF Button           |                           |

## 1.2 Getting Started

- In the case with a standard camera are the following:
  - Camera with handle and side straps.
  - Two rechargeable battery packs.
  - Battery charger with mains leads.
  - Battery charging shoe.
  - Neck strap.
  - This manual
  - Customer software.
  - USB Data lead.Customer configured cameras will only be accompanied by the items specified with the order.
- The rechargeable batteries should be fully charged before use (see section 3). Fit the battery into the compartment on the top of the camera and push down until a click is heard. To remove the battery, press the battery release button and the battery will eject and can be removed.
- Turn on the camera using the middle red button on the rear. A red light will be illuminated to show the camera is powered.
- A short (1 second) button press will blank out the display, a 3 second press will bring up the on screen menu while a long (8 second) press will go through the menu and turn off the camera.
- After switch-on and for approximately 5 seconds, a start-up screen will be displayed on the camera screen while the system performs a self-test routine. This start-up screen is end-user configurable.
- The thermal image, with battery status display, time and date, spot temperature and spot target markings, will appear.
- While the Argus<sup>®</sup> F-Type is in operation, the camera has to recalibrate to maintain its performance and image quality. This is achieved by an internal shutter that “freezes” the image; this in turn allows the electronics to recalibrate and redisplay the image. This recalibration will only occur when necessary due to a change in scene or internal temperatures. The freezing of the image will last for less than 0.2 seconds.
- The Argus<sup>®</sup> F-Type camera can be used with or without the handle. To remove the handle, spin the large thumbwheel anti-clockwise until the handle detaches from the camera body. Refitting is the reverse of this, making sure that the locating pip is positioned correctly.

## 1.3 Camera Features

- **Dynamic Scene Colourisation (DSC)**

The Argus® F-Type provides the end-user with a selection of colour palettes, which colourises the thermal image to allow the user to pinpoint the hottest areas within the scene. These can be selected through the menu or via the customer software.

These colour palettes are:

- Grey Scale (White Hot)  
Basic white-hot greyscale, expanded to cover the dynamic range of the scene with no colourisation.
- Grey Scale (Black Hot)  
Basic black-hot grey scale, expanded to cover the dynamic range of the scene with no colourisation.
- Night Seeker Green (White Hot)  
Colourises the picture using a green tint where hot objects appear green.
- Night Seeker Green (Black Hot)  
Colourises the picture using a green tint where hot objects appear black.
- Night Seeker Red (White Hot)  
Colourises the picture using a red tint where hot objects appear red.
- Night Seeker Red (Black Hot)  
Colourises the picture using a red tint where hot objects appear black.
- Heat-finder (White Hot)  
Basic white hot greyscale, expanded to cover the dynamic range of the scene with yellow to red colourisation of the hottest part of the scene.
- Heat-finder (Black Hot)  
Basic black hot greyscale, expanded to cover the dynamic range of the scene with yellow to red colourisation of the hottest part of the scene.
- Full Colour 1  
A full colour scheme that goes from blue through green to red / white.
- Full Colour 2  
A full colour scheme that goes from blue through magenta to orange.
- Full Colour 3  
A full colour scheme that goes from black through blue, green to red.

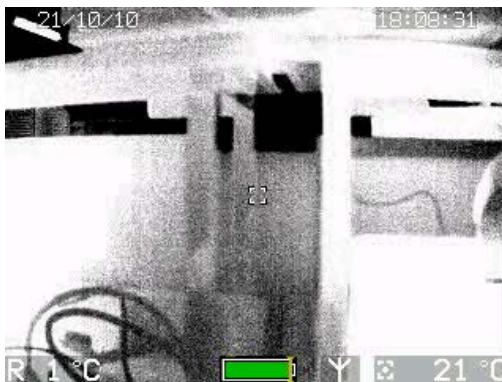
- **Search & Compare Modes**

The Argus<sup>®</sup> F-Type has two specialist search image processing modes to assist detailed search and detection. These are Search Mode and Compare Mode. Both are available in black or white hot imagery.

Search mode is especially suited to the detection of faint heat sources. In this mode the image sets mid grey to be the temperature in the central spot temperature box with the black to white range in the image set to be either 1, 2 or 4°C as chosen by the user.

The range is adjusted by the use of the right button (normally zoom) and the current setting is displayed in the bottom left of the screen.

Shown right is a typical image taken in the 1°C range



Note that with this mode the image may contain large areas of black and white if the whole current image has large areas that differ widely from the central spot, especially in the 1°C range setting.

Compare mode allows the comparison of adjacent heat sources where the temperature difference is of interest. Pressing the right hand button will lock the image settings at that of the scene, and all subsequent scenes are displayed with the same temperature range as the 'locked in' setting. This makes it much easier to compare objects when it is not possible to put them in the same field of view. Whether the image is locked or not is displayed in the bottom left of the screen

Shown right is a typical image with the range locked



Note that with this mode it is possible to get a blank screen if the whole current image is outside the range of the 'locked-in' image

The unlocked icon. Click the right button to lock the image levels



- **Direct Temperature Measurement**



The Argus<sup>®</sup> F-Type allows the operator to view the average temperature of the centre spot of the scene (defined by the target markings). The temperature reading is displayed in the bottom right-hand corner of the display. This system is intended to give the operator the ability to detect possible hazards or heat signatures of people or objects.

The camera can be configured to give a reading in degrees Celsius or degrees Fahrenheit by using the user software or the on screen menu. Scene temperatures between -40 and +200 °C (-40 and +392 °F) can be displayed. This feature can be turned off if not required by using the software provided or the on screen menu.

**Note:** If the object in the scene does not fully fill the target marks then a false reading may be obtained.

Different materials have differing surface emissivities, which will produce variations in the temperature readings. Variations can also be caused by the distance from the object. This temperature measurement must be regarded as an indication and not a guaranteed reading.

If the temperature falls outside the maximum value, the display will show “+++”.

- **SceneSave<sup>™</sup> Image Capture**



Up to 100 images can be captured and stored in the Argus<sup>®</sup> F-Type.

These images can then be viewed or deleted using the on screen menu or software provided. See section 2 for details of on screen menu. Using the software provided, captured images can be downloaded to a suitable laptop/PC in several formats.

To capture an image, press the left-hand button. The image capture symbol appears for a short time above the ambient temperature reading and the number of the image out of 100 will also be indicated on the display.

If the image capture button is pressed and the camera already has 100 images stored, a 'CAMERA FULL' warning will appear. Before further images can be captured, unwanted images will need to be deleted using the on screen menu or software.



- **Two-Mode Sensitivity**

The Argus<sup>®</sup> F-Type has two levels of sensitivity: High and Low. These levels provide the user with a thermal image over the widest possible temperature range. The Argus<sup>®</sup> F-Type will switch to the optimum level of sensitivity automatically.

- High Sensitivity Mode

The Argus<sup>®</sup> F-Type will operate in High Sensitivity mode under normal operating conditions. The image that is produced is clearer and will show more detail. The temperature range for this mode is between -20 °C and 100 °C (-4 °F and 212 °F).

- Low Sensitivity Mode

The Argus<sup>®</sup> F-Type will automatically switch to Low Sensitivity mode when higher temperatures have been detected. The image that is produced loses some clarity, but will still show a significant amount of detail. The temperature range for this mode is between -20°C and 200 °C (-4 °F and 392 °F).

- **Zoom**



A short press on the right-hand button operates the zoom function. Each press of the button changes the zoom status. The zoom will scroll from normal to X2 to X4 to normal etc. The zoom symbol will appear to the right of the display above the spot temperature reading and is indicated by the magnifying glass icon and the range zoomed (X2, X4) on the screen.

The temperature measurement sample window is also expanded to suit. The zoom feature can be turned off if not required by using the software provided. Zoom is not available whilst using the specialist search modes

- **Time and Date**

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

dd/mm/yy                      hh:mm:ss

The date and time will be shown on any image captured. Date and time can be changed using the customer software. Date format can be selected via the customer software or on screen menu if required. This feature can be turned off if not required by using the customer software or the on screen menu.

## 1.4 Display Warning Graphics

The Argus® F-Type 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:

- **Over-temperature Warning**



As the circuitry within the camera approaches its maximum internal operating temperature, a warning symbol in the shape of a thermometer will appear to the left of the battery display. 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, the warning symbol will flash.

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

- **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 left of the

battery status indicator.

If the warning appears and if appropriate, turn the camera off and leave for five minutes. Turn the camera on and check if the warning symbol has disappeared. If the warning symbol is still present, or the symptoms return, contact e2v technologies.

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

## 1.5 Operating Notes

The following information relates to a “white-hot” image.

- **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.

- **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 the greater detail in the picture.

- **Temperature Differences**

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

- **Search for Persons and Objects**

- The camera is not restricted to locating fugitives. In many cases, the user will be using the camera to search for hidden suspects, guard dogs, dangerous obstacles, evidence, and drug interdiction operations.

- **Search and Rescue**

- The camera can view large areas of land and water, searching rapidly. Searches can be performed during darkness or full sunlight and in a variety of weather conditions.

- **Covert Surveillance**

- Thermal imagers can immediately highlight if a vehicle has recently been moved (hot tyres, brakes, engine compartment) and is advantageous in urban areas. The camera can also investigate between homes, buildings and see into dark garages and entranceways.

- **Windows and Polished Surfaces**

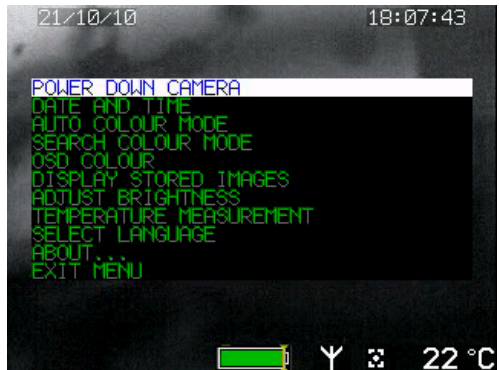
- Glass is not transparent to long wavelength infrared energy and it is not possible for the operator to use the camera to look through a window. A white window would indicate that the window itself is relatively warm. Just as we see reflections in glass under normal circumstances, it is possible that 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.

## 2. MENU CONTROL FUNCTIONS

Some of the Argus® F-Type features can be adjusted and set up via the on screen menu without the need to connect the camera to a laptop/PC.

The on screen menu is controlled by the camera buttons.

To activate the menu using the camera buttons, press the centre button on the camera for 3 seconds.



To access any function, press the left or right grey buttons to scroll up and down, until the desired option is displayed. Once the desired option has been selected press the centre button to access further actions described below. Pressing the centre button again will perform or set the action and return to the previous menu. Scrolling down to the 'EXIT MENU' function and pressing the centre button will exit the menu.

The menu has the following items

- Power Down Camera
- Date and Time
- Auto Colour Mode
- Search Colour Mode
- OSD Colour
- Display Stored Images
- Adjust Brightness
- Temperature Measurement
- Select Language
- About
- Exit Menu

- **Power Down Camera**

Hold down the centre button for 3 seconds to make the camera turn off.

- **Date and Time**

Menu options are :

- Date Format Month/Day/Year
- Date Format Day/Month/Year
- Date and Time Off

Select desired format and press the centre button to set this.

- **Auto Colour Mode**

The colour palette can be chosen from the following:

- Grey Scale (WH)
- Grey Scale (BH)
- Night Seeker Red (WH)
- Night Seeker Red (BH)
- Night Seeker Green (WH)
- Night Seeker Green (BH)
- Heat-Finder Red (WH)
- Heat-Finder (BH)
- Full Colour 1
- Full Colour 2
- Full Colour 3

While scrolling through the menu list the colour schemes will change. Select the preferred option to set this in the camera.

- **Search & Compare Mode**

The specialist search functions can be selected from the following:

- Search Mode Off
- Search Mode (White Hot)
- Search Mode (Black Hot)
- Compare Mode (White Hot)
- Compare (Black Hot)

Selecting off returns to the previous chosen colour scheme in standard automatic mode

- **Display Stored Images**

The stored images can be scrolled through.

Button menu: If the image is chosen, a sub-menu will appear and have the following functions:

- Return to View Images
- Return To Main Menu
- Delete Image

Remote control menu: The press the delete button to delete the image directly.

- **Adjust Brightness**

The brightness can be adjusted up or down. Select the preferred option to set this in the camera

- **On Screen Display (OSD) Colour**

The colour of the on-screen graphics (time, date and temperature) can be chosen between:

- Black Text
- White Text

Select the preferred option to set this in the camera

- **Temperature Measurement**

The temperature units can be selected between the following:

Temperature Units °C

Temperature Units °F

Spot Off

Select the preferred option to set this in the camera

- **Language**

Select the preferred option to set this in the camera.

- **About...**

This screen shows a number of diagnostic items:

Product & serial number

Software version

MAC & IP address for use with network accessories (EPVA, TX)

Camera operating statistics

Battery status

- **Exit menu**

Select this to exit the menu.

### 3. RECHARGEABLE BATTERY PACK AND CHARGER



The rechargeable battery system supplied with the Argus® F-Type camera has been specifically designed to fast-charge the Argus®4 Ni-MH rechargeable batteries (P7030R). The charger is to be used with the Argus®4 Charging Shoe (P7030CS) and is mains powered. The charger is a fully automatic “smart charger”, monitoring voltage, time and temperature and ensures optimum charge for the battery.

#### 3.1 Rechargeable Battery Pack

The Argus® F-Type camera is supplied with two rechargeable battery packs. The rechargeable packs are designed to power an Argus® F-Type for 4 hours from a full charge and use Nickel Metal Hydride (Ni-MH) cells. The battery pack contains circuitry that monitors the cell's temperature to ensure that maximum performance is provided and that correct charging is performed. The pack also has a recoverable short-circuit protection.

The battery pack provides an output to the ‘battery status Indicator’ on the camera display. This battery status indicator provides a continuous colour display of the remaining charge, allowing the user to avoid unpredicted power loss.

#### Battery Indicator

With a new, fully charged battery, the battery indicator will show full with a solid green bar.

The full length of the battery indicator represents 4 hours of normal use, so a new good condition battery will show ‘full’ (solid green bar) for some time, as it will run for a little over 4 hours.

When using transmitter accessories the solid coloured bar will drop faster as they consume more power.

The solid coloured bar will progressively decrease as the battery capacity is consumed. When the bar has reached a quarter full, its colour will turn orange and there is approximately one (1) hour of battery life remaining.

As the battery capacity is consumed further, the bar will turn red and there is approximately 30 minutes of battery life remaining.

When the battery capacity has been consumed, the battery status bar border will turn red and flash to alert the operator. The time remaining will typically be 10 minutes.



### **Battery Age Indicator (Yellow Marker)**

The yellow marker shows the maximum charge capacity of a given battery placed into the camera. This keeps track of the battery condition as the cells age to give the user a guide as to how well the battery can perform. When the battery is charged, the capacity will be approximately the same as the indicator.



The image shown right is a fully charged old battery, which shows it will run the camera for around 1½ hours.

To maintain the accuracy of the battery charge indicator, e2v recommends that batteries be occasionally run through a full charge & discharge cycle as follows:

- Charge battery and make sure that the battery indicator has gone up to reach the yellow marker.
- Discharge fully
- Recharge

This will measure the battery health and reset the yellow line to the current maximum battery capacity.

#### **Note:**

- It is recommended that before each BA team enters the fire, the camera should be used with a fully charged rechargeable battery.
- Disposal of batteries should be in line with local procedures and they should be segregated from domestic waste. Alternatively, the batteries may be returned to e2v technologies for safe disposal.
- Deleted text
- It is recommended that the rechargeable batteries are placed into storage fully charged and are routinely recharged so as to be ready for use and to maintain performance.
- Shelf life is optimised by storage between -10°C and 40°C (14°F and 104°F).

## **3.2 Battery Charger**

### **Warnings**

- The charger has been designed for indoor use only and should not be exposed to water or dust. Do not cover the charger while in use.
- The charger is turned on once connected to the mains. Disconnecting it from the mains will turn it off. The mains socket should be accessible to allow disconnection if a fault should occur.
- The charger is supplied with several mains cables for worldwide use; ensure that the correct mains lead is used. Check the condition of the mains lead before use.

### **Hazards**

- The charger contains dangerous voltages and the cover should not be removed. There are no user-serviceable parts inside the charger or charging shoe.

### **Cautions**

- Do not charge batteries with too high or low battery temperatures.



- Only use the Argus<sup>®</sup>4 Rechargeable Battery (P7030R) and Charging Shoe (P7030CS) with this charger.
- Ensure that the battery charger output lead has been correctly fitted to the charging shoe before connection to the mains.

## Indications on Charger

### Normal Charging Operation



Wait for yellow before inserting battery



Fast Charging (up to 2 hours)



Top up charge (2 hours)  
Battery is at least 80% charged in this state



Charging finished. Maintenance mode.

### To charge another battery

Remove charged battery



Wait for yellow before inserting next battery, 30 seconds

### Other indications



Battery cold (<0 °C, 32 °F), slow charging.  
Fast charging will begin when it warms up.



Battery warm (40 – 60 °C, 104 – 140 °F).  
Fast charging will begin when it cools down.



Battery Hot. (>60 °C, 140 °F).  
Remove battery and allow to cool before charging



Other Fault

### Note

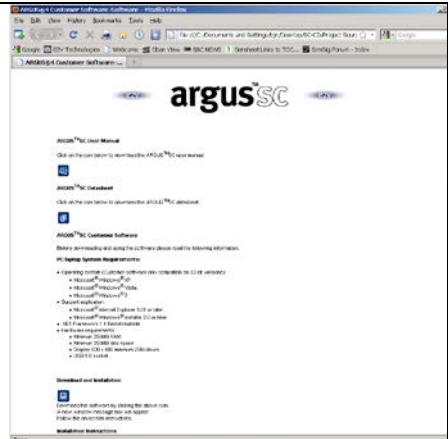
If the battery has not been used for some time, or is completely discharged, the charger allows 3 minutes for the battery to recover. If this is not enough and the charger indicates 'top up' after 3 minutes, allow the battery to 'top up' for the full 2 hours before recharging as normal.

## 4. SOFTWARE & CUSTOMER CD

The Argus® F-Type camera is supplied with a CD containing current datasheets on both the camera range and the accessories available.

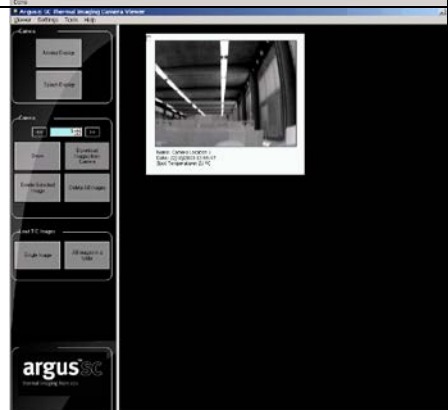
The CD also contains the customer software for our range of cameras.

Insert the CD in a PC and follow the link and instructions to install the software.

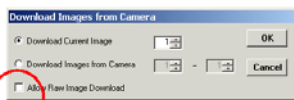


The customer software allows the user to perform the following tasks:

- View and download images to the PC and save them in standard formats (bmp and jpg)
- Save images for later manipulation
- Delete images from the camera
- Upload a splash screen to the camera, for example a force logo
- Set the time and adjust camera features to suit the user, such as colour mode and time/date display.
- Retrieve a status report



To download a raw image data file, tick the box before downloading the image. The raw image can then be examined using tools such as image J <http://rsbweb.nih.gov/ij/>



## 5. CLEANING, MAINTENANCE AND REPLACEABLE 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 a period of ten minutes every month to check correct operation.

- **Replaceable 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.**

### **Handle (P7250HA)**

To remove the handle, spin the large thumbwheel anti-clockwise until the handle detaches from the camera body. Refitting is the reverse of the above, making sure that the locating pip is positioned correctly.

### **Side Straps (P7030SS)**

To replace the side straps, remove the front and rear bumpers. Unbuckle the straps and pull through the retaining pins. Replacement is the reverse of removal.

### **Front Bumper (P7030FB), Rear Bumper (P7030RB)**

To replace the front and rear bumpers, unclip the bumper from the groove in the case body and peel off. Replacement is the reverse of removal, making sure that the bumper fits into the groove.

### **Other Spares and Accessories**

<b>Accessory</b>	<b>Part Number</b>
Neck Strap	P7030NS
Rechargeable Battery Pack	P7250R
Battery Charger Unit	P7030BC
Battery Charging Shoe	P7250CS
USB Computer Lead	P7030PC
Bung	P7030BU
User Manual	P7250UM
CD-ROM	P7250CD
Camera Carry Case	P7250SC
Hard Carry Case	P7030HC

## 6. SPECIFICATIONS

### Camera Specification *Specialist Search Series*

#### Environmental Data

Thermal Conditions	The camera has been designed to operate continuously between -10 °C (14 °F) and +80 °C (176 °F)
Sealing -	IP67, will withstand short-term immersion in water
Impact -	The camera will withstand a drop from a height of 2 metres (78 inches) onto concrete
Storage -	It is recommended that for maximum effective operational life, the storage temperature is kept between -10 °C and +40 °C (14 °F and 104 °F)

#### Optical Data

##### Detector

Sensor type -	Uncooled Microbolometer
Sensor material -	Amorphous Silicon (ASi)
Resolution -	320 x 240 array
Pixel size -	25µ
Spectral response -	8 – 14 µm
MDTD -	50 mK typical (Minimum Discernible Temperature Difference)
Dynamic range -	-40 °C to 200 °C (-40 °F to 1832 °F) via 2 ranges with auto-switching.
Refresh rate -	60 Hz
Spot temperature range -	-40 °C to 1000 °C (32 °F to 1832 °F)

##### Lens

Lens material -	Germanium
Focal length -	8.6mm (P7250 series); 19mm (P7225 series)
Focal distance -	1 m to infinity, optimised at 4 m (3 feet to infinity, optimised at 13 feet)
Aperture -	f/1.0 (P7250 series); f/1.3 (P7225 series)
Horizontal Field of view -	50° horizontal (P7250 series); 25° (P7225 series)

##### Display

Type -	High grade, Industrial, colour TFT active matrix LCD
Size -	90 mm (3.5 inches)
Pixel format -	QVGA 320 x 240, (each pixel RGB format, total pixels 230,400 pixels)
Video input -	Sensor synchronised direct digital drive
Backlight -	430cd/m <sup>2</sup> at 20mA (High brightness, white LED)

#### Mechanical Data

Overall dimensions (H x W x D) -	130 mm x 185 mm x 185 mm (5.1 x 7.2 x 7.2 inch) (nominal)
Camera weight -	<1.3 kg (2.8 pounds) without battery, <1.6 kg (3.4 pounds) with battery
Outer camera case and handle -	Radel®R-5100 and Santoprene®
Rear and front bumpers -	Multiflex® or Santoprene®
Neck and side straps -	Nomex®

Lens window - Germanium (2 mm thick) with durable coating

### Electrical Data

Power consumption - < 3 W typical  
Start-up time - 5 seconds typical  
Battery type - Ni-MH Rechargeable Battery  
Battery capacity - 2 AH  
Battery life - 4 hours @ ambient temperature (22 °C, 72 °F)  
Battery charge time - 2 hours nominal  
Battery recharge cycles - 500 to 80% capacity, 1000 recharges in total  
Battery sealing - IP67  
Charging temperature - 0 °C to 40 °C (32 °F to 104 °F); 65 °C (150 °F) can be tolerated  
Charger input voltage - 100 – 240 VAC, 50/60 Hz, 1 A max  
Charger operating temperature - 0 °C to 40 °C (32 °F to 104 °F)

### Video Outputs

Digital - MPEG4, RTSP video streaming @ (P7250/25 - 10fps, P7259/29 - 9Hz)  
Analogue - NTSC 525-line 60 Hz , EIA RS-170 (P7250/25 - 30fps, P7259/29 - 9Hz)

### Compliance Data

#### RFI/EMC

Emissions - BS EN 61000-6-3:2007, FCC CFR-47 Subpart B Class B, AUS/NZ 4251.1  
Immunity - BS EN 61000-6-2:2005  
Safety - IEC 60950-1 and related national standards  
Vibration/Shock - BS EN 60721-3-2 Class 2M3.  
RoHS - All parts of the system are compliant with EU directive 2002/95/EC

## **7. WARRANTY TERMS**

### **7.1 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 is one (1) year and for the rechargeable battery pack is six (6) months 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 that persons other than its own or authorised service personnel make repairs or modifications, 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.**

### **7.2 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.

### **7.3 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.**

# APPENDICES

## Ateme Software

Ateme has proprietary rights to elements of software contained within this product.

## MPEG-4 Visual Patent

### Notice to Customers

This product is licensed under the MPEG-4 visual patent portfolio license for the personal and non-commercial use of a customer for:

- Encoding video in compliance with the MPEG-4 visual standard (“MPEG-4 video”);  
  
and/or
- Decoding MPEG-4 video that was encoded by a customer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed by MPEG LA to provide MPEG-4 video. No license is granted or shall be implied for any other use.

Additional information including that relating to promotional, internal and commercial uses and licensing may be obtained from MPEG LA, LLC. See <http://www.mpegla.com>

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# e2v

# argus<sup>®</sup>

thermal imaging from e2v

## Argus<sup>®</sup> F-Type User's Manual





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