



Marconi Applied Technologies

ARGUS2

User's Manual





Marconi Applied Technologies

***ARGUS*2**

Firefighters' Solid State
Through Smoke
Vision System

User's Manual and Warranty Terms



ENGLISH

FRENCH


GERMAN


SPANISH

ARGUS² 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.

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; there are no user serviceable parts within the charger or the rechargeable pack.

The charger conforms with IEC Safety Class 1. To maintain this protection the AC supply lead must only be connected to the mains supply via a socket with a grounded contact.

Charger misuse

The charger must only be used for charging Argus 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 Argus 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 conforms to sealing specification IP20. The charger must not be subjected to water spray, rain or immersion.

 **CAUTION**

Do not obscure or impede the operation of the fan at the rear of the charger.

The Rechargeable Battery System is despatched from Marconi Applied Technologies in a safe condition. Any unauthorised modifications may compromise safety and invalidate the warranty.

Marconi Applied Technologies' products are designed to be safe when used in accordance with the instructions provided. Marconi Applied 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 Marconi Applied Technologies.

Introduction

ARGUS2

The Argus 2 solid state thermal imager is brought to you by Marconi Applied Technologies, the world leader in through smoke vision systems.

Marconi Applied Technologies, with over 15 years experience in firefighters' thermal imaging, continues to produce high quality, affordable systems designed exclusively for the fire and rescue services.

Argus 2 uses a new high resolution solid state detector to provide superb quality images under the most arduous conditions while retaining the class-leading ergonomics of the previous Argus system.

Through the proper use of this Argus 2 system, the user will be able to see through dense smoke and darkness.

By detecting and displaying the relative temperatures of objects within the scene, it assists the firefighter to locate the seat and spread of the fire

and to move swiftly in search and rescue of casualties. The ability to see in zero visibility conditions significantly improves firefighter safety and mobility.

Argus 2 is designed to withstand the high temperatures, knocks and driving spray often encountered in the fire fighting environment.

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.

Charger and Battery Packs

These products have been designed exclusively for use with the Argus (P4438), Argus Plus (P4438P) and Argus 2 (P4455R) cameras.

The Argus charger is designed to fast charge Argus rechargeable packs within 100 minutes, with fully automatic operation.

The Argus rechargeable pack is designed to power an Argus camera for over 2 hours from a full charge. Inside each pack is the 'in-pack intelligence'; a small circuit, which continuously monitors the charge state of the pack and provides an output to the 'battery status bar' in the Argus Camera. This battery status bar provides a continuous real-time indication of the remaining charge, allowing the firefighter to avoid unpredicted power loss. A built-in discharge option is included to recalibrate the rechargeable pack when required.

This charger is compatible with all Argus rechargeable battery packs, Ni-Cd (DAS533206BA/CA) and Ni-MH (DAS533206DA).

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1 Camera

1.1 GETTING STARTED

1.1.1 In the case with this manual you will find the camera, a neckstrap and two battery packs (cases may also contain rechargeable batteries which are optional). The battery pack is inserted into the handle of the camera.



1.1.2 Check that the battery packs contain LR6 type batteries (if using rechargeable batteries, check they are fully charged before use). Open battery door and insert the battery pack as shown. It will only fit in the correct orientation. Close the door.



- 1.1.3 Turn on the unit using the switch on the rear. This will latch in and illuminate a red light in the centre.



- 1.1.4 From two seconds after switch on the camera will display the Argus 2 start up screen while the system performs a self-test routine.



- 1.1.5 After 20 to 40 seconds (depending on ambient temperature) the thermal image, with battery status display in lower left hand corner, will appear.



1.2 BATTERIES

1.2.1 Recommended Batteries

- AA Size The most widely available battery.
- Type LR6 This is essential to achieve the specified battery life. LR6 indicates an alkaline manganese battery which can supply the power requirements of the Argus 2. Labels such as 'long life' or 'super power' are manufacturers' titles and do not necessarily imply LR6.
- Change all 8 All batteries in a set must be changed simultaneously.
- ★ Disposal Batteries should be disposed of in line with their manufacturers' instructions.

Note: Rechargeable packs and charger unit are available as an option to primary cell operation.

1.2.2 Battery Changing

1.2.2.1 Open the cartridge by pressing down on the contact end while holding the outer. The inner will slip out of the sleeve.



1.2.2.2 Remove the old batteries and dispose of them safely.

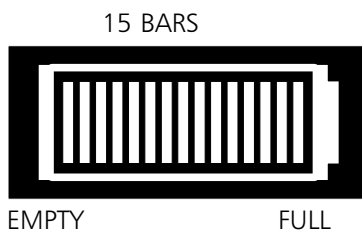
1.2.2.3 Insert new batteries in the orientation shown on the inner carrier.

1.2.2.4 In order to verify the pack is ready for use it may be tried in the camera. A fully charged battery will show the status display as full (see below).

1.2.3 Battery Indicator

1.2.3.1 The battery pack will power the camera for typically two hours. It is recommended that before each BA team enters the fire the battery pack is fitted with new batteries (or a fully charged rechargeable battery).

Note: The operating life of LR6 batteries varies greatly between manufacturers and is temperature dependent. Marconi Applied Technologies recommend the use of rechargeable systems at ambient temperatures of 5 °C or less.



1.2.3.2 With a new set of batteries, the battery bar will be at its full status with 15 bars showing. With high quality batteries it may remain at this height for some minutes. The number of bars will then progressively decrease as the batteries are consumed. When the battery is low, the whole battery display will flash slowly to alert the operator. The time remaining will depend on the type of batteries being used but will typically be 10 minutes.

1.3 DISPLAY GRAPHICS

The Argus 2 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:

1.3.1 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 section 1.2.3.2 for details.

1.3.2 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, the temperature warning graphic will flash.

When the temperature warning is flashing, 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.

1.3.3 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.

1.3.3.1 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.

1.3.3.2 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.

1.4 OPERATING NOTES

1.4.1 Interpreting The Image - Relative Temperatures

The image displayed is simply a black and white picture of the infra red 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 between 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.

1.4.2 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.

1.4.3 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 to the surroundings. For example, a fire behind a door will cause the door to appear more white against the background. Similarly, a white area on an otherwise dark wall could indicate the area of fire behind the masonry.

1.4.4 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.

1.4.5 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 infra red 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.

1.4.6 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.

1.4.7 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.

1.4.8 Control of Water Streams/jets

When viewed through the ARGUS 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.

1.4.9 Smoke Types

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

1.4.10 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.

1.5 CLEANING and MAINTENANCE

1.5.1 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 please contact your supplier.

1.5.2 Simple Fault Finding

If you are experiencing problems with your ARGUS camera then please follow the fault-finding flow diagram.

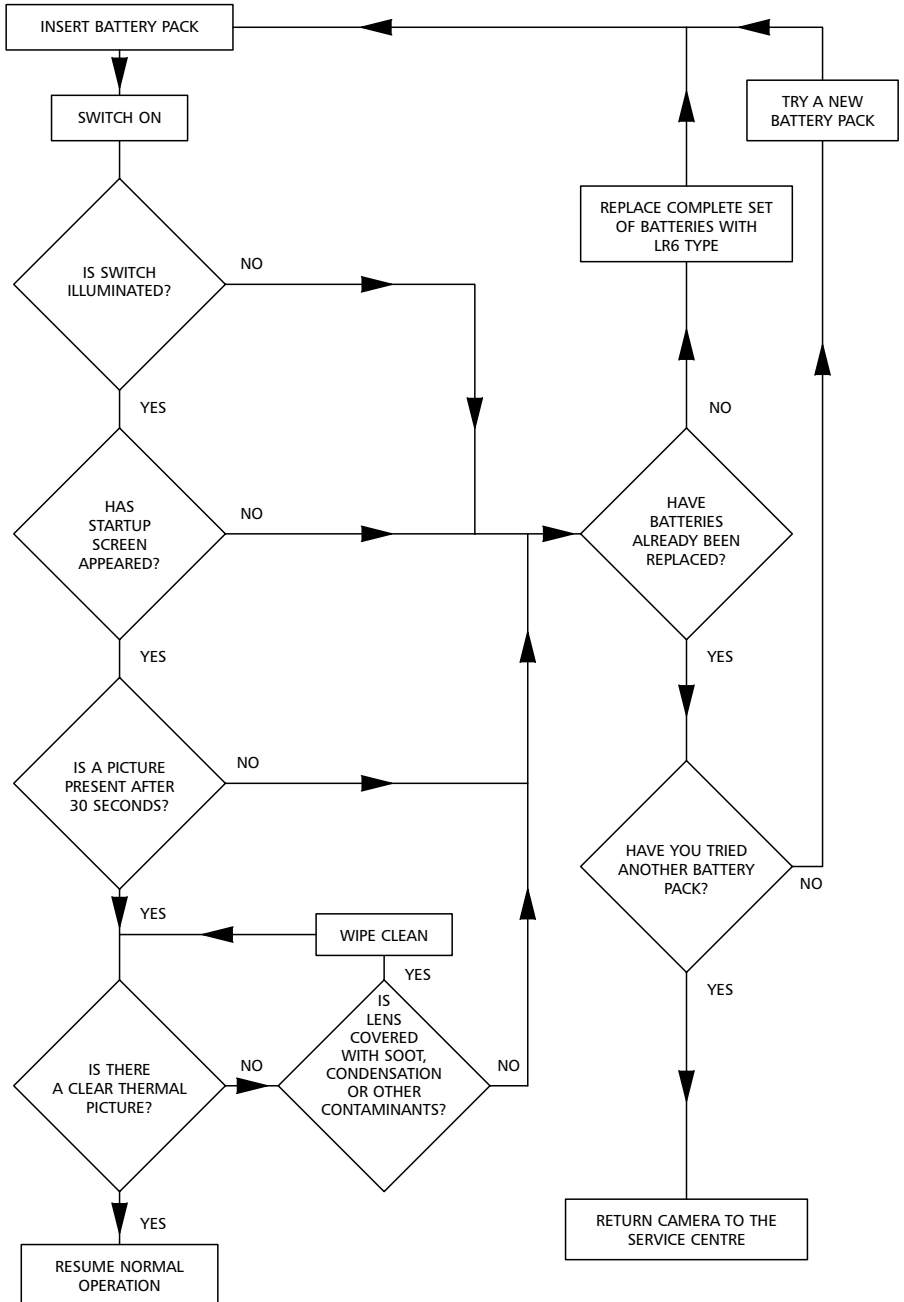
1.5.3 User Maintenance and Replaceable Parts

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.

Due to the environment in which the camera is used certain parts can be replaced by the user. These and the codes by which they should be ordered are as shown on the diagram below. **THERE ARE NO OTHER USER SERVICEABLE PARTS.**



FAULT-FINDING FLOW DIAGRAM



Reference numbers refer to the sections below on how to fit these parts.

If any damage beyond these parts occurs please return the camera to Marconi Applied Technologies or an authorised repair centre. Any attempt at repair by unauthorised personnel may cause serious damage and will invalidate the warranty.

1.5.4 Sidestraps (DAS532948AA)

These are retained by two screws on each side. Once these screws are undone the straps may be lifted off. The replacement pair contains all new parts required. The old strap and screws can be discarded. Replacement is the reverse of removal.

1.5.5 Heat Insulating Muff (DAS532951BA)

This is supplied as one piece including insulation and BNC cover. Also included in the kit is the secondary lens seal.

First remove the sidestraps as per 1.5.4. The muff can be spread at the rear and pulled forward and upward off the main camera.

If required the secondary lens seal can now be replaced. This simply pulls off the camera. To replace, align the tabs with the slots in the main casing and press home, moving progressively round the lens.

Replacement of the heat insulating muff is simply the reverse of removal.

Note: Cameras fitted with temperature measurement require a different outer cover with holes for the sensors (DAS548088AA).

1.5.6 Neckstrap (DAS532982AA)

This is removed simply by undoing the karabiner attaching it to the camera. If any part of the neckstrap is damaged it should be replaced as a complete assembly.

1.5.7 Visor (DPP532448AA)

This flexible part clips tightly over a flange at the rear of the camera. It is removed by pulling backward the material near the flange. The visor will detach from the camera. To fit the new part place the cutout on the visor over the flange at the top of the camera, pull it over one top corner. Now pull the visor over firstly the second top corner and then the two lower corners.

1.5.8 Battery Pack (DAS532398AA)

Spare primary cell packs are available.

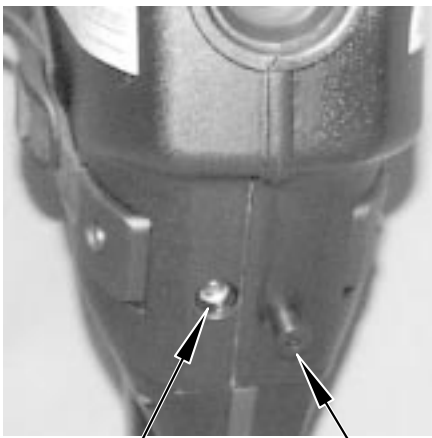
1.6 SPECIFICATION

Dimensions	30 x 29 x 12 cm (W x H x D) nominal
Weight	2.2 kg nominal (excluding batteries)
Power supply	8 primary batteries type LR6 or NiMH rechargeable pack
Power consumption	4.5 W nominal (dependent on ambient temperature)
Battery status indicator	On screen
Battery life	120 minutes typical continuous operation
Field of view	Bi-ocular, 50° horizontal
Visor	Adapted to masks
Optics	Germanium lens f/1.0 for infrared, 8 to 14 μm , automatic aperture
Carrying mode	In readiness by neckstrap. In use by grip or adjustable sidestrap
Operation	One button with indicator light
Depth of field	One to thirty metres
Visual performance	Visibility is not impaired by smoke, water vapour, water spray or darkness but is obstructed by stone, glass, snow, ice and most plastics. An image builds up when surfaces have a temperature difference of greater than 0.1 °C.

Objects with increasing temperature	The more an object is heated the brighter its image, i.e. a man near a fire appears darker than the fire.
High temperature tolerance	The camera is designed to have a temperature tolerance greater than that of the firefighter, e.g. 80 °C maximum one hour 150 °C maximum 15 minutes See also section 1.3.2.
Low operating temperature	Normal batteries minimum 5 °C Rechargeable batteries – 10 °C
Storage temperature	–10 to +50 °C
Sealing	Dust and water proof to EN 60529, class IP67
EMC	As directive 89/336/EEC
Mechanical stability	Tested against shock and vibration
Video output	Connector for BNC plug (sealed by rubber cap). Connection cable 75 Ω coaxial for recorder or monitor. The unit will support up to 100 metres of video cable.
Storage	Carrying case for camera, neckstrap, spare battery pack and user manual
Service	Periodic service is not required. High temperature insulation, visor and sidestrap exchangeable by user. Repairs must only be made by the manufacturer or authorised local service centre.

1.7 TEMPERATURE MEASUREMENT (Optional, designated as /TP)

The addition of two sensors to the Argus 2 camera allows the operator to view the average scene temperature (within a defined area) and the ambient air temperature. The temperatures are displayed as an overlay on the camera video at the bottom right hand side of the picture. This system is intended to give the operator the ability to detect possible hazards such as hot gas bottles or tanks and a warning of high air temperatures.



SPOT SENSOR

AMBIENT SENSOR

1.7.1 Spot Temperature

Measurement is by means of a pyrometer mounted inside the camera case and viewing the scene through an aperture in the outer cover. The sensor is protected from heat and moisture as are the other camera electronics. The sensor displays the average scene temperature within the sample window, which appears as a digital readout at the bottom of the display. The camera can be configured to give a reading in degrees C or degrees F, specified at time of ordering.



SAMPLE WINDOW

SPOT TEMP

AMBIENT TEMP

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 that 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.

1.7.2 Ambient Temperature

The ambient temperature sensor plugs into the RS 232 computer test point on the front of the camera and the ambient temperature is displayed on the video as for the scene temperature above. The range for ambient temperature measurement is 0 °C (32 °F) to 150 °C (302 °F). If ambient temperature measurement is not required the sensor can be unplugged and the readout display will automatically be removed from the video.

Specification

Range . . . spot/scene temperature
0 °C to 500 °C
(32 °F to 932 °F)
Ambient 0 °C to 150 °C
(32 °F to 302 °F)

Accuracy:

spot (see note) . . . ± 2 °C or ± 2%
(whichever is the greater)
ambient ± 2 °C or ± 5%
(whichever is the greater)

Power consumption . . . negligible
This option has no significant effect on the battery life of the camera.

Note the sensor assumes that the object in the scene has an emissivity of 0.95. The readings may be inaccurate when viewing shiny metal or glass objects.

2 Charger and Batteries

2.1 GETTING STARTED: Connecting Power to the Charger

The charger is powered from the AC mains supply. When powered with no pack inserted, the STATUS indicator will show green. The charger may be left powered continuously.

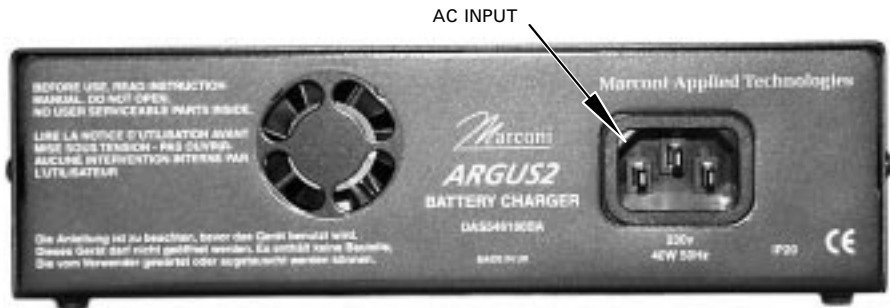
2.1.1 To Power from an AC Supply
Connect the AC supply lead to the AC mains input socket on the rear panel of the charger (see below).

Connect the AC supply lead to a mains supply of the voltage specified on the rear panel.

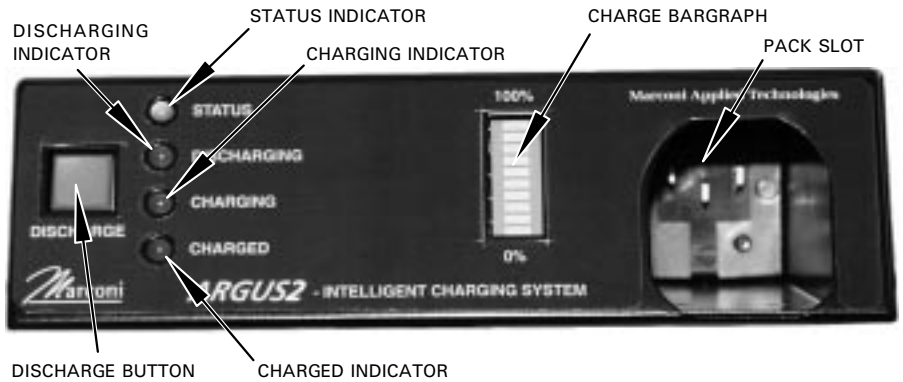
CAUTION

Charger type DAS546180AA is for operation on 100/120 V, 60 Hz mains supplies.

Charger type DAS546180BA is for operation on 200/240 V, 50 Hz mains supplies.



2.2 OPERATION of the CHARGER



2.2.1 Indicator Description

STATUS	GREEN	ready for use
	RED	pack is outside normal operating temperature range
DISCHARGING	YELLOW	any remaining charge in the pack is removed to allow optimum recharge
CHARGING	YELLOW	pack under charge; progress indicated by bargraph
CHARGED	GREEN	pack has completed fast charge and entered trickle charge mode

The bargraph indicator to the left of the pack entry slot shows the charge state of the pack.

Note: Packs should only be inserted into the charger when the STATUS indicator is green and all other

indicators are unlit. This may be up to 30 seconds after the removal of the previous pack.

2.2.2 Operation (Normal)


Connect power to the charger as described in section 2.1.1. Wait for the STATUS indicator to show green. Insert a pack into the front panel slot, contact end first. The CHARGING indicator will illuminate showing the charger has entered the fast-charge mode. The charge bargraph will indicate the amount of charge present.

When the fast-charge mode is completed the CHARGING indicator will extinguish and the CHARGED indicator will illuminate, showing the trickle charge mode has started. This mode will top up the battery to full capacity.

The charge bargraph will indicate 100% when the pack is fully charged. A pack may be removed from the charger at any time. The available charge will be proportional to that indicated on the charge bargraph.

It is recommended that the packs are left in the charger for 2 hours after the CHARGED light has illuminated, to allow them to achieve full charge

capacity. A pack may safely be left in the powered charger indefinitely.

 **CAUTION** Do not leave a pack in the charger with no power applied for long periods; this may deeply discharge the pack and cause loss of cell capacity.

2.2.3 Operation (Discharge before Charge)

(For pack electronics re-calibration)

Connect power to the charger as described in section 2.1.1. Wait for the STATUS indicator to show green.

Depress the DISCHARGE button before inserting the pack. The DISCHARGING indicator will illuminate showing the charger has entered the discharge mode. Release the DISCHARGE button. The charge bargraph will show the amount of charge present.

When the pack has been discharged the charger will switch automatically to fast charge mode. Operation will then be as described in section 2.2.2 above.

2.3 ADDITIONAL OPERATING NOTES

2.3.1 Conditioning New Packs or Packs from Storage

New packs and packs which have been unused for several weeks may be in a state of deep discharge. In this state upon charging, the CHARGED indicator will illuminate before the bargraph shows 90%. The pack will need conditioning as follows:

- 1) Remove the pack from the charger. When the CHARGED indicator extinguishes, re-insert the pack into the charger. The charger will enter the fast-charge mode.
- 2) If the CHARGED indicator illuminates with less than 90% indicated on the charge bargraph, leave the pack in the charger for at least two hours then remove the pack from the charger. When the CHARGED indicator extinguishes, re-insert the pack into the charger. The pack should now fast charge to 100% as normal.

Note: In extreme cases it may be necessary to repeat the conditioning.

2.3.2 Shelf Life

The pack self-discharge consumes up to 2% of full charge per day. Packs stored off-charge will still run a camera for 1 hour after two weeks storage.

The charger's maintenance mode ensures that packs remain fully charged. It is recommended that packs are stored on charge, or routinely charged-up.

The shelf life of charged packs is maximised by storage between 10 and 25 °C.

2.3.3 Memory Effects

The charger is designed to counteract 'memory' effects in the pack by using a pulse charging system to condition the pack while charging. There is no need for a regular discharge-before-charge routine. The discharge before charge function is intended for occasional use to recalibrate the in-pack intelligence (see section 2.3.5).

2.3.4 Temperature Range for Charging

If the temperature is below 10 °C, the charger will automatically reduce the rate of charge to avoid cell damage; the STATUS indicator will show red, the CHARGING indicator will illuminate and charging will continue at the lower rate. Normal fast charging will automatically resume when the pack temperature exceeds 10 °C.

When using the discharge before charge mode below 10 °C, the fast charging mode is not entered until the pack temperature exceeds 10 °C.

The charger has a safety cut-out, which will operate if the pack temperature rises above 45 °C. In this case the charger will not charge and the STATUS indicator will show red. No indicators or functions operate in this state. The pack should be removed and the charger power supply momentarily disconnected to reset it.

2.3.5 Re-calibrating the 'In-pack Intelligence'

In normal use the 'in-pack intelligence' automatically re-calibrates the full capacity of the pack whenever it receives a full discharge.

If the battery pack is often used for short periods and never fully discharged the accuracy of the battery status display in the camera will reduce.

If it is suspected that there is any inaccuracy in the bargraph display, re-calibrate the pack by using the discharge before charge function as described in section 2.2.3.

It is recommended that this procedure is carried out on each pack at least once per month, to re-calibrate the pack electronics.

Note: A reduced charge capacity may have arisen as a consequence of ageing or damage within the pack.

2.3.6 Normal Indications



STATUS



DISCHARGING

The charger is ready to accept a battery pack.



CHARGING



CHARGED



STATUS



DISCHARGING

The charger is discharging the pack.



CHARGING



CHARGED



STATUS



DISCHARGING

The charger is charging the pack.



CHARGING



CHARGED



STATUS



DISCHARGING

The charger has completed the fast charge and entered trickle charge mode.



CHARGING



CHARGED

Other indications may appear briefly as the charger changes between these states.



= INDICATOR OFF

2.3.7 Other Indications



STATUS



DISCHARGING

(No battery pack inserted)



CHARGING

The charger is outside the normal charging temperature range.



CHARGED



STATUS

(Battery pack present)



DISCHARGING

The charger/pack is too hot. Remove pack and disconnect power until the charger/pack has cooled down. The bargraph reading is not accurate in this state.



CHARGING



CHARGED



STATUS



DISCHARGING

The charger is discharging the pack and it is cold.



CHARGING



CHARGED



STATUS



DISCHARGING

The charger is charging the pack slowly because it is cold.



CHARGING



CHARGED



STATUS

(Full bargraph) The charger has charged the pack and it is cold.



DISCHARGING



CHARGING

(Empty bargraph) The charger has discharged the pack but it is too cold to charge. Normal charging resumes when the temperature is within limits.



CHARGED

2.4 PROBLEM SOLVING

Problem	Cause	Action
No indicators lit	No power	Check connections and fuses. If the problem persists return the charger to the supplier
Only green STATUS light when pack inserted	Pack not connected	Remove and reinsert the pack. If the problem persists return the pack to the supplier
CHARGED state reached without full battery indication	Pack was in deep discharge state	Condition the pack as described in section 2.3.1. If unsuccessful, recalibrate the pack as described in section 2.3.5
Peak charge indication appears inaccurate	In-pack Intelligence requires recalibration	Recalibrate the pack as described in section 2.3.5

2.5 SPECIFICATIONS

2.5.1 Charger (DAS546180AA or BA)

Description Fast charger for one ARGUS Rechargeable Pack.

Power requirements:

DAS546180AA	100 to 120 V AC, 60 Hz, 40 W max
DAS546180BA	200 to 240 V ac, 50 Hz, 40 W max
Width	180 mm nominal
Height (including feet)	60 mm nominal
Depth	170 mm nominal
Net weight	1.5 kg nominal
Temperature (operating)	0 to +40 °C
Environmental sealing	IP20
Electromagnetic compatibility	EMC Directive 89/336/EEC
Safety	Low Voltage Directive 73/23/EEC, BSEN60335 Part 1 and Part 2-29

For operation from a DC supply, the use of an appropriate DC to AC adaptor is recommended. Contact Marconi Applied Technologies for details if required.

2.5.2 PACK (DAS533206DA)

Description:	A rechargeable Ni-MH pack for use only with the Argus or Argus 2 Camera. The pack contains charge management circuitry to indicate charge status to the camera, and has recoverable short-circuit protection.
Capacity	8 Ni-MH cells, IEC nominal capacity 1600 mAh
Length	129 mm nominal
Width	36 mm nominal
Height	38 mm nominal
Net weight	250 g nominal
Temperature:	
storage	–10 to +40 °C
operating	–10 to +40 °C –10 to +65 °C (can be tolerated for short periods)
Environmental sealing	IP55

3 Warranty Terms

3.1 EXPRESS WARRANTY

Marconi Applied Technologies ("Marconi") 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 Marconi'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.

Marconi shall be released from all obligations under this warranty in the event repairs or modifications are made by persons other than its own or authorized service personnel or if the warranty claim results from misuse of the product. No agent, employee or representative of Marconi may bind Marconi 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. MARCONI SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

3.2 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 Marconi, or for any other cause of action, shall be the repair and/or replacement, at Marconi's option, of any equipment or parts thereof, that after examination by Marconi are proven to be defective. Replacement equipment and/or parts will be provided at no cost to the purchaser, F.O.B. Marconi's plant. Failure of Marconi to successfully repair any non-conforming product shall not cause the remedy established hereby to fail of its essential purpose.

3.3 EXCLUSION OF
CONSEQUENTIAL DAMAGES
EXCLUSION OF CONSEQUENTIAL DAMAGES – PURCHASER SPECIFICALLY UNDERSTANDS AND AGREES THAT UNDER NO CIRCUMSTANCES WILL MARCONI 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 MARCONI.

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

USA

The argusdirect team
Marconi Applied Technologies
4 Westchester Plaza
Elmsford
NY 10523-1482
Tel (Toll Free): 1 888 587 0103
Fax: (914) 592 5148
E-Mail: argus.direct@marconi.com

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