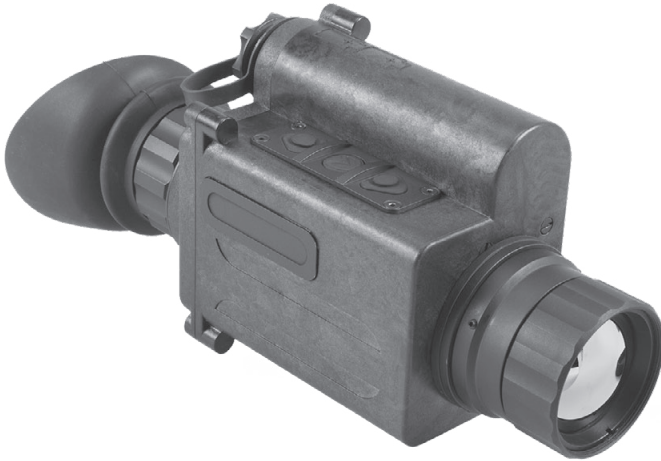




PROMETHEUS-C

Thermal Imaging Monocular



OPERATION AND MAINTENANCE MANUAL

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SAFETY SUMMARY

Before operating this product, carefully study this Operation and Maintenance Manual.

The Armasight Prometheus-C Thermal Imaging Monocular is a precision electro-optical instrument and requires careful handling. To avoid physical danger to the user and damage to the equipment, follow all WARNINGS, CAUTIONS and NOTES.

Below are definitions of the alerts that will appear throughout this Manual:

WARNING – Identifies a clear danger to the person operating the equipment.

CAUTION – Identifies risk of damage to the equipment.

NOTE – Highlights essential procedures, conditions, statements, and important instructional information for the user.

The information provided in this manual is for familiarization purposes only. The contents may undergo further changes with no commitment by Armasight® to notify customers of any updates.

Armasight® assumes no responsibility for any misprints or other errors that this manual may contain.

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**WARNING:**

This product contains natural rubber latex, which may cause allergic reactions! The FDA has reported an increase in the number of deaths associated with sensitivity to natural latex proteins. If you are allergic to latex, learn which products contain it and strictly avoid exposure to those products.

CAUTION:

- Do not dismantle the equipment.
- Keep the equipment clean. Protect it from moisture, dramatic temperature drops, and electrical shocks.
- DO NOT force the equipment controls past their stopping points.
- DO NOT leave the equipment activated during breaks in operation.
- DO NOT store the equipment with the batteries installed.
- Thoroughly clean and dry each item before placing them into the storage case.

CAUTION:

To prevent thermal damage to the equipment, never point it, either on or off, directly at the sun or any other source of high intensity light that the unprotected human eye cannot tolerate (such as a welding arc). To prevent inadvertent exposure to these types of sources, never leave the equipment with the objective lens cap off.

NOTES:

- To avoid losing unsaved data, DO NOT remove the batteries or disconnect the external power source while the Prometheus-C is on.
- Inadvertent sun damage is not considered a defect in material or workmanship, and is therefore not covered in the product warranty.

LIST OF CONTENTS

TITLE	PAGE
Safety Summary	2
List of Contents	4
List of Figures	5
List of Tables	6
How to Use This Manual	6
1. INTRODUCTION	7
1.1 General Information	7
1.1.1 Type of Manual	7
1.1.2 Model Number and Equipment Name	7
1.1.3 Purpose of Equipment	7
1.1.4 Reporting Equipment Improvement Recommendations	8
1.2 Warranty Information and Registration	8
1.2.1 Warranty Information	8
1.2.2 Limitation of Liability	8
1.2.3 Product Warranty Registration	9
1.2.4 Obtaining Warranty Service	9
1.3 List of Abbreviations	10
2. DESCRIPTION AND DATA	11
2.1 System Description	11
2.2 Specifications	13
2.3 Standard Components	15
2.4 Optional Equipment	16
2.5 Key Features	17
3. OPERATING INSTRUCTIONS	18
3.1 Installation and Mounting	18
3.1.1 Battery Installation	18
3.1.2 Connecting an Additional Equipment	18
3.1.3 Installing the Prometheus-C on a Tripod	19
3.2 Controls and Display Indications	19
3.2.1 Controls	19
3.2.2 Main Menu	21
3.3 Operating Procedures	25
3.3.1 Operating	25
3.3.2 Prometheus-C Shut-Down	26

4. PREVENTIVE MAINTENANCE AND TROUBLESHOOTING	28
4.1 Preventive Maintenance Checks and Services	28
4.1.1 Preventive Maintenance Checks and Services (PMCS)	28
4.2 Operator Troubleshooting	29
4.3 Maintenance	30
4.3.1 General	30
4.3.2 Cleaning Procedures	30
4.4 Return Instructions	31
APPENDIX	32
A List of Spare Parts	32
B Product Warranty Registration Card	33

LIST OF FIGURES

FIGURE	TITLE	PAGE
2-1	Prometheus-C Thermal Imaging Monocular	11
2-2	System Description	12
2-3	Standard Components	15
2-4	Optional Equipment	16
3-1	Battery Installation	18
3-2	Video Cable Installation	19
3-3	Controls	20
3-4	Button Control Panel	20
3-5	Main Menu	21
3-6	Palette Menu	22
3-7	Palette Menu. Continued	22
3-8	Enhancement Menu	23
3-9	Digital Contrast Correction	23
3-10	Sharpness Correction	23
3-11	Smart Scene Optimization	24
3-12	Gain Correction	24
3-13	Settings Menu	24
3-14	Setting Buttons	26
A-1	Prometheus-C Spare Parts List	32

LIST OF TABLES

TABLE	TITLE	PAGE
2-1	System Description	13
2-2	System Data	14
2-3	Optical Data	14
2-4	Electrical Data	14
2-5	Mechanical Data	14
2-6	Environmental Data	14
2-7	Standard Components	15
2-8	Optional Equipment	16
3-1	Controls and Indicators	20
3-2	Button Controls	21
4-1	Preventive Maintenance Checks and Services	28
4-2	Operator Troubleshooting	30
A-1	Prometheus-C Spare Parts List	32

HOW TO USE THIS MANUAL

USAGE

You must familiarize yourself with the entire manual before operating the equipment. Read the entire maintenance checklist before performing maintenance. Follow all WARNINGS, CAUTIONS, and NOTES.

MANUAL OVERVIEW

The Manual contains sections on operating and maintaining the Prometheus-C Thermal Imaging Monocular.

Throughout this Manual, the Prometheus-C Thermal Imaging Monocular will be referred to as the Prometheus-C, "the device," or "the equipment."

A List of Spare Parts is in Appendix A.

The Product Warranty Registration Card is in Appendix B.

INTRODUCTION

1.1 GENERAL INFORMATION

1.1.1 TYPE OF MANUAL

Operation and Maintenance (including a List of Spare Parts).

1.1.2 MODEL NUMBER AND EQUIPMENT NAME

The Prometheus-C Thermal Imaging Monocular is available in the following versions that are structurally different in terms of thermal imaging cameras and objective lenses:

Prometheus-C 336 2-8x25 (9 Hz), FLIR Tau 2 - 336x256 (17 μ m) 9Hz Core, 25mm Lens

Prometheus-C 336 2-8x25 (30 Hz), FLIR Tau 2 - 336x256 (17 μ m) 30Hz Core, 25mm Lens

Prometheus-C 336 2-8x25 (60 Hz), FLIR Tau 2 - 336x256 (17 μ m) 60Hz Core, 25mm Lens

Prometheus-C 640 1-8x25 (30 Hz), FLIR Tau 2 - 640x512 (17 μ m) 30Hz Core, 25mm Lens

1.1.3 PURPOSE OF EQUIPMENT

Armasight Prometheus-C is the latest and most technologically-advanced thermal imaging monocular for the sporting, law enforcement, and military markets. The Prometheus-C is based on the latest FLIR Tau 2 VOx microbolometer core.

The Prometheus-C is a solid state, uncooled, long-wave infrared, magnified, dedicated handheld thermal imager intended for day and nighttime missions.

The 24/7 mission capability is only one of the strengths of the Prometheus-C. The thermal imaging technology also allows you to detect targets by cutting through snow, dust, smoke, fog, haze, and other atmospheric obscurants. Unlike the use of laser targeting or near-infrared illumination to augment night vision equipment, the Prometheus-C thermal imager is extremely difficult to detect with other devices, as it emits no visible light or RF energy.

Prometheus C provides 1x optical magnification and 8x digital zoom for model based on 640x512 core and 2x optical magnification and 4x digital zoom for models based on a 336x256 core.

The Prometheus-C is powered by two CR123A (2x3V) batteries. The Extended Battery Pack or 6VDC/600mA power source can also be used to power the Prometheus-C.

The Prometheus-C is equipped with a standard NTSC/PAL video input/output function that makes it possible to connect to an external video display or monitor, or to record thermal images for field documentation or training purposes. It also allows the transmission of data from one remote display to that of the Prometheus-C.

The Prometheus-C can be used in conjunction with other Armasight equipment such as the Digital Video Recorder or Extended Battery Pack.

Extremely reliable and versatile, the Prometheus-C is a highly useful thermal imaging system.

1.1.4 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS

User recommendations for improvements to the device are encouraged.

Mail your comments to:

Armasight Inc.
815 Dubuque Avenue,
South San Francisco, CA 94080
USA

Or, send an email to info@armasight.com.

1.2 WARRANTY INFORMATION AND REGISTRATION

1.2.1 WARRANTY INFORMATION

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of three (3) years from the date of purchase. This warranty does not cover the battery or damage caused by leaking batteries. Nor does it protect against damage due to loss, misuse or mishandling. The uncooled thermal camera sensor is warrantied for a period of ten (10) years from the date of purchase.

In the event a defect that is covered by the warranty occurs during the 3 year period stated above, Armasight, at its option, will either repair or replace the product, and such action on the part of Armasight shall be the full extent of Armasight's liability, and the Customer's sole and exclusive remedy. This warranty does not cover a product (a) used in other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer or by any party other than Armasight without prior written consent of Armasight; (d) special order or "close-out" merchandise or merchandise sold "as-is" by either Armasight or the Armasight dealer; or (e) merchandise that has been discontinued by the manufacturer and either parts or replacement units are not available due to reasons beyond the control of Armasight. Armasight shall not be responsible for any defects or damage that in, Armasight's opinion, is a result from the mishandling, abuse, misuse, improper storage or improper operation, including use in conjunction with equipment which is electrically or mechanically incompatible with or of inferior quality to the product, as well as failure to maintain the environmental conditions specified by the manufacturer.

This warranty is extended only to the original purchaser. Any breach of this warranty shall be waived unless the customer notifies Armasight at the address noted below within the applicable warranty period.

The customer understands and agrees that except for the foregoing warranty, no other warranties written or oral, statutory, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, shall apply to the product. All such implied warranties are hereby and expressly disclaimed.

1.2.2 LIMITATION OF LIABILITY

Armasight will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages or liabilities arising out of the use of this product. Operation and use of the product are the sole responsibility of the Customer. Armasight's sole undertaking is limited to providing the products and services outlined herein in accordance with the terms and conditions of this Agreement. The provision of products sold and services performed by Armasight to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of or creating any obligation toward any third party or legal entity outside Armasight and the Customer. Armasight's obligations under this Agreement extend solely to the Customer.

Armasight's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to Armasight by the customer or customer's dealer. Armasight shall not, in any event, be liable for special, indirect, incidental, or consequential damages, including, but not limited to, lost income, lost revenue, or lost profit, whether such damages were foreseeable or not at the time of purchase, and whether or not such damages arise out of a breach of warranty, a breach of agreement, negligence, strict liability or any other theory of liability.

1.2.3 PRODUCT WARRANTY REGISTRATION

In order to validate the warranty on your product, Armasight must receive a completed Product Warranty Registration Card for each unit, or the Customer can complete a warranty registration on our website at www.armsight.com. Please complete the included form (Appendix B) and immediately mail it to our Service Center:

Armasight Inc.
815 Dubuque Avenue
South San Francisco, CA 94080
USA

1.2.4 OBTAINING WARRANTY SERVICE

To obtain warranty service on your unit, the End-User must notify the Armasight's service department in order to receive a Return Merchandise Authorization number (RMA#). The customer can do this by sending an email to service@armsight.com.

When returning any product, please take or send the product, postage paid, with a copy of your sales receipt, to our service center, Armasight Inc. at the address noted above. All merchandise must be fully insured with the correct postage; Armasight will not be responsible for improper postage or missing or damaged merchandise during shipment.

When sending merchandise back, please write the RMA# clearly on the outside of the shipping box. Please include a letter that indicates your RMA#, Name, Return Address, reason for service return, Contact information (such as a valid telephone number and/or e-mail address), as well as proof of your purchases that will help us to establish the valid start date of the warranty. Product merchandise returns that do not have an RMA listed may be refused or be subject to a significant delay in processing.

Estimated Warranty service time is 10-20 business days. The End-User/Customer is responsible for postage to Armasight for any warranty service. Armasight will cover return postage/shipping to continental USA End-Users/Customers after warranty repair only if product is covered by the aforementioned warranty. Armasight will return the product after warranty service via domestic ground service and/or domestic mail. The postage and shipping fees for any other requested, required or international shipping methods will be the responsibility of the End-User/Customer.

1.3 LIST OF ABBREVIATIONS

μm	micrometer
AWREC	Advanced Wireless Remote Control
C	Celsius (Centigrade)
CCW	counterclockwise
CW	clockwise
F	Fahrenheit
FL	Focal Length
g	gram
H	Height
hr	hour
in	inch
inf.	infinity
kg	kilogram
L	Length
lbs	pounds
m	meter
mA	milliampere
min	minute
mm	millimeter
NO.	Number
NTSC	National Television Standards Committee
NUC	Non Uniformity Correction
OEM	Original Equipment Manufacturer
oz	ounce
PAL	Phase Alternating Line
PMCS	Preventive Maintenance Checks and Services
RMA#	Return Merchandise Authorization number
sec	second
SEQ	sequence
SR	Service Representative
UCMNUC/ FFC	User-Controlled Manual Non-Uniformity Correction/ Flat-Field Correction
V	Volt
W	Width

DESCRIPTION AND DATA

2.1 SYSTEM DESCRIPTION

The Prometheus-C consists of next primary parts: a body, a lens assembly and an eyepiece assembly. The Prometheus-C is a thermosensitive device. It senses the differences in heat emitted by objects in its field of view, and converts the received temperature pattern into a viewable image that represents the scene in contrasting black & white or color patterns, depending on the user's selected image palette.

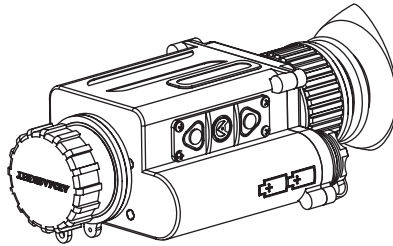


FIGURE 2-1. PROMETHEUS-C THERMAL IMAGING MONOCULAR

NOTE:

It is important that the Prometheus-C sensor receive sufficient thermal contrast between the target and background area, or between the different parts of a target. For example, the vast temperature contrast between the snow and any heat target (such as an animal) makes it very easy to distinguish the target.

The main optical-electronic components of the Prometheus-C include: an objective Germanium thermal lens, eyepiece, a thermal-imaging camera, a display, a control card, and a button control panel. The Prometheus-C is equipped with manual eyepiece and objective lens focusing.

To accommodate individual user needs, the Prometheus-C has a variety of digitally controlled options such as:

- Display Brightness
- Digital Zoom
- Palette Color Selection
- User-Controlled Manual Non-Uniformity Correction/ Flat-Field Correction (UCMNUC/ FFC)
- Imaging Enhancements
- Custom Settings

All Prometheus-C devices are based on FLIR Tau 2.7.2 or later cameras that allow for improvements in overall image quality in a wide range of dynamic thermal environments. The Prometheus-C has employed special user-adjustable imaging tools that include:

- **Active Contrast Enhancement (ACE)** – a digital “Contrast” correction that allows for smart scene optimization based on dynamic adjustments, where a variety of contrast levels occur depending on relative scene temperature.
- **Second Generation Digital Detail Enhancement (DDE)** – a “Sharpness” correction that digitally enhances the picture, significantly sharpens edges, and further reduces image noise.
- **Smart Scene Optimization (SSO)** – a fine-tuning computational correction that significantly improves overall visual acuity for targets that have thermal signatures similar to the surrounding background.
- **Automatic Gain Control (AGC)** – a “Gain” correction that used to automatically adjust the gain to an appropriate range, the weaker the image signal, the stronger the gain.
- **User-Controlled Manual Non-Uniformity Correction/ Flat-Field Correction (UCMNUC/ FFC).** There is a mechanical shutter between the camera sensor and the lens. This shutter is used to perform a non-uniformity correction (NUC), also known as flat-field correction (FFC). During FFC, the shutter presents a uniform temperature source to each detector element in the array. While imaging the flat-field source, the camera updates the offset correction coefficients, resulting in a more uniform image after the process is complete. All Prometheus-C models allow for user to manually trigger or interrupt scheduled UCMNUC/ FFC function.
- **Silent Shutterless NUC™ (SSN)** – In addition to User-Controlled Manual NUC/ FFC, all Prometheus-C models employ a digital, supplemental, non-mechanical flat-field correction that extends periods between mechanical shutter events and further reduces image noise. SSN is an always ON enhancement.

Information on the current operating state (battery status, active function in the display etc.) is continuously displayed, making field operation of the Prometheus-C simple and convenient.

Manufactured for exceptional durability, the Prometheus-C has a lightweight and robust body. The Prometheus-C can be mounted to a tripod with 1/4” threaded socket located on the body of the device.

A standard NTSC/PAL video input/ output connector enables an external video display (monitor/ TV) or video recorder to be connected to the Prometheus-C. An external 6VDC/600mA power source can also be connected to the Prometheus-C.

The Prometheus-C is powered by two CR123A (2x3V) batteries.

Figure 2-2 shows the Prometheus-C. The ITEM NO. column of Table 2-1 indicates the number used to identify items in Figure 2-2.

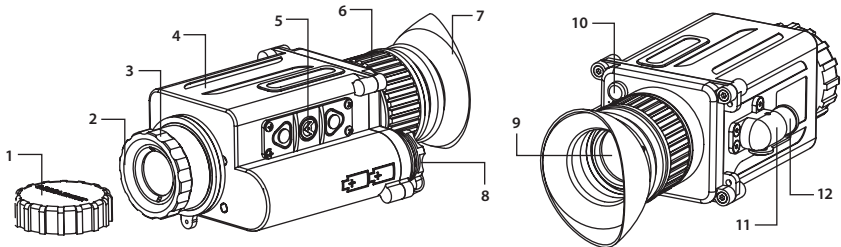


FIGURE 2-2. PROMETHEUS-C THERMAL IMAGING MONOCULAR. SYSTEM DESCRIPTION

TABLE 2-1. SYSTEM DESCRIPTION

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Objective Lens Cap	7	Eyecup
2	Objective Lens	8	Battery Cap
3	Objective Focus Ring	9	Eyepiece
4	Body	10	Power Button
5	Button Control Panel	11	Connector
6	Eyepiece Focus Ring	12	Connector Cap

2.2 SPECIFICATIONS

TABLE 2-2. SYSTEM DATA

ITEM	PROMETHEUS C 336 2-8x25	PROMETHEUS C 640 1-8x25
Optical Magnification	2x	1x
Digital Zoom	1x, 2x, 4x	1x, 2x, 4x, 8x
Objective Lens Type	Germanium	
Type of Focal Plane Array	FLIR Quark 2	
Frame Rate	9 Hz, or 30 Hz, or 60 Hz	30 Hz
Pixel Array Format	336x256	640x512
Pixel Size	17 µm	
Display Type	LED VGA	
Pixel Display Format	640x480	
Display Brightness	Discretely Adjustable to 8 Levels	
Turn-on Time, max	3 sec	
Temperature Imaging Modes (Image Palettes)	White Hot, Black Hot, Fusion, Rainbow, Globow, Ironbow1, Ironbow2, Sepia, Color1, Color2, Ice-Fire, Rain, and OEM	
User-adjustable Image Enhancement Tools	<ul style="list-style-type: none"> • Active Contrast Enhancement (ACE) - "CONTRAST" • Second Generation Digital Detail Enhancement (DDE) - "SHARPNESS" • Smart Scene Optimization (SSO) - "SMART SCENE" • Automatic Gain Control - "GAIN" • User-Controlled Manual Non-Uniformity Correction/ Flat-Field Correction (UCMNUC/ FFC) • Silent Shutterless NUC™ (SSN) 	
Analog Input/ Output Format	PAL / NTSC (640x480 pixels)	

TABLE 2-3. OPTICAL DATA

ITEM	PROMETHEUS C 336 2-8x25	PROMETHEUS C 640 1-8x25
Field of View (ang. X x Y)	13° x 10°	25° x 20°
Objective Focal Length	25 mm	
Objective F-number	F/1.0	
Focusing Range	0.25m to inf.	
Exit Pupil Diameter	5 mm	
Eye Relief	16 mm	
Diopter Adjustment	-5 to +5 diopters	

TABLE 2-4. ELECTRICAL DATA

ITEM	DATA
Battery	Two CR123A 3V Lithium batteries or CR123 type rechargeable batteries with voltage from 3.0V to 3.7V (2)
Current Consumption, maximum	320 mA
Battery Life at 20°C (68 °F)	up to 4 hr (optional up to 12 hrs)
Extended Battery Pack	Two 18650 rechargeable batteries (3.7V), four CR123 rechargeable batteries with voltage 3.7V max, or four standard CR123A 3V Lithium batteries (operational time up to 8 hr)
External Power Supply	6 VDC/ 600mA

TABLE 2-5. MECHANICAL DATA

ITEM	DATA
Overall Dimensions	150×90×52 mm (5.9×3.5×2.0 in)
Weight (w/o Batteries)	0.4 kg (0.88 lbs)

TABLE 2-6. ENVIRONMENTAL DATA

ITEM	DATA
Operating Temperature	-40 to +50°C (-40 to +122°F)
Storage Temperature	-50 to +70°C (-58 to +158°F)
Impact Loading	700 g
Environmental Rating	Water and Fog-Resistant

2.3 STANDARD COMPONENTS

The Prometheus-C standard components are shown in Figure 2-3 and listed in Table 2-8. The ITEM NO. column indicates the number used to identify items in Figure 2-3.

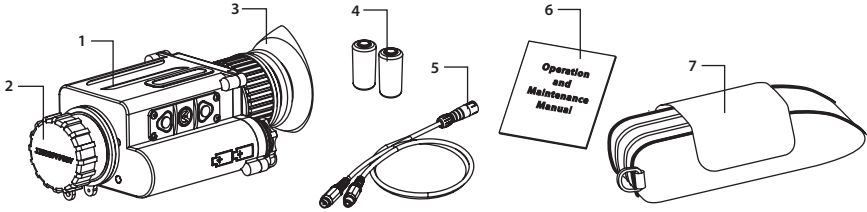


FIGURE 2-3. STANDARD COMPONENTS

TABLE 2-7. STANDARD COMPONENTS

ITEM NO.	DESCRIPTION	QUANTITY
1	Armasight Prometheus-C Thermal Imaging Monocular A thermal imaging device.	1
2	Objective Lens Cap Securely protects the objective lens from dirt and mechanical damage and provides thermal protection of the Prometheus-C. Comes attached to the objective lens.	1
3	Eyecup A specially designed latex eyecup that reduces the amount of light that escapes from the eyepiece and prevents illumination of the user's face, minimizing the risk of detection. Prevents ambient light from entering the equipment. Allows for correct and comfortable positioning. Comes attached to the eyepiece.	1
4	CR123A Lithium Battery Two CR123A batteries are used to power the Prometheus-C.	2
5	Video Cable A cable used to connect the analog video input/output of the Prometheus-C to external display devices (monitor/ TV) or power sources. Supported input and output video formats include PAL and NTSC.	1
6	Operation and Maintenance Manual Provides safety information, equipment description, mounting procedures, operating instructions, and preventive maintenance checks and services.	1
7	Carrying Case A textile bag used for the transportation and storage of the Prometheus-C and its accessories.	1

2.4 OPTIONAL EQUIPMENT

Optional items are shown in Figure 2-4 and listed in Table 2-9.

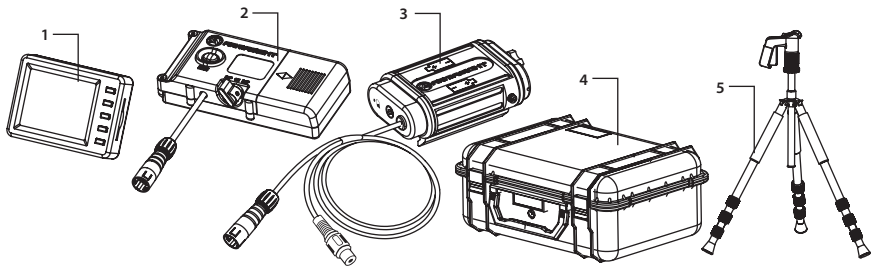


FIGURE 2-4. OPTIONAL EQUIPMENT

The ITEM NO. column indicates the number used to identify items in Figure 2-4.

The PART NO. column indicates the primary number used by the manufacturer, to identify an item.

TABLE 2-8. OPTIONAL EQUIPMENT

ITEM NO.	DESCRIPTION	PART NO.
1	HD DVR Digital Video Recorder High Definition Digital Recorder for all Armasight High Performance Digital and Thermal Devices.	ATAM000005
2	Digital Video Recorder DT A compact digital system used for video recording, storage and playback. Can also serve as an external power source. Equipped with a remote control.	ATAM000004
3	Extended Battery Pack The power source for extended operational time. Takes four CR123A Lithium batteries (3V), CR123 rechargeable batteries (3.2V or 3.7V), or two 18650 rechargeable batteries (3.7V).	ATAM000008
4	Hard Shipping/ Storage Case A protective case used for the shipping/storage of the Prometheus-C and its accessories.	ANH000001
5	Tripod with a Grip Lightweight and compact tripod used to produce a stable image for long range observation or photo shoot with long exposures.	ANAMTM0003

2.5 KEY FEATURES

- Latest FLIR Tau-2 17µm pitch thermal sensor
- Fast Germanium objective lens
- Multiple versions with optical magnifications 1x or 2x
- Simple, intuitive 3-button control
- Lightweight and robust design
- Easy to operate
- Manually adjustable eyepiece and objective lens
- Real-time display
- Digitally controlled features:
 - Palette
 - Enhancement
 - Settings
 - Display Brightness
 - Electronic Magnification
 - User-Controlled Manual Non-Uniformity Correction/ Flat-Field Correction (UCMNUC/ FFC)
- Current operational state information display (battery status, palette setting, digital zoom)
- Analog video input and output (NTSC/PAL)
- Powered by two standard CR123A batteries
- Power input capability
- Digital video recorder (optional)
- Serviceability under severe conditions
- Water and fog-resistant
- Limited 3-year warranty
- 10-year warranty on FLIR detector

3

OPERATING INSTRUCTIONS

3.1 INSTALLATION AND MOUNTING

3.1.1 BATTERY INSTALLATION

CAUTION:

Verify that the equipment is OFF before replacing the batteries.

To install two CR123A batteries (refer to Figure 3-1):

1. Unscrew the battery cap (A).
2. Insert the batteries (B) into the battery compartment (C). Align the polarity symbols on the batteries with the polarity symbols on the unit body.
3. Replace the battery cap.

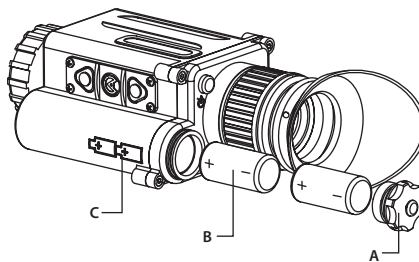


FIGURE 3-1. BATTERY INSTALLATION

3.1.2 CONNECTING AN ADDITIONAL EQUIPMENT

CAUTION:

Turn off the Prometheus-C before you begin connecting/ disconnecting any external equipment and before removing the batteries.

Remove the connector's protective cap.

Connect the cable of Armasight Digital Video Recorder or the Extended Battery Pack to the Prometheus-C connector.

Use plug A (Figure 3-2) of the video cable to connect an external video recorder/ monitor/ TV to the Prometheus-C. Connect plug C of the video cable to the Prometheus-C connector.

Use plug B of the video cable to connect an external power source (6VDC/ 600mA) to the Prometheus-C. Connect plug C of the video cable to the Prometheus-C connector.

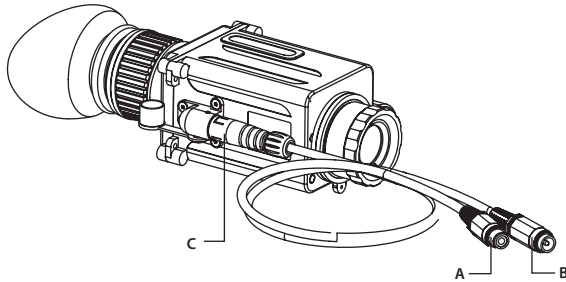


FIGURE 3-2. VIDEO CABLE INSTALLATION

NOTE:

The external power supply must have a standard OD double-pole socket with a positive center contact.

CAUTION:

After removing the cable, replace the protective cap over the connector.

3.1.3 INSTALLING THE PROMETHEUS-C ON A TRIPOD

To mount the Prometheus-C to a tripod, screw the tripod into the 1/4" threaded socket located on the side of the Prometheus-C.

CAUTION:

The unit may be badly damaged if the tripod collapses or falls over. Remove the unit from the tripod if it is not within your reach.

3.2 CONTROLS AND DISPLAY INDICATIONS

3.2.1 CONTROLS

CAUTION:

DO NOT force the equipment controls past their stopping points.

The Prometheus-C controls are shown in Figures 3-3 and 3-4 and are defined in Tables 3-1 and 3-2. The ITEM NO. columns indicate the numbers used to identify items in the figures.

NOTE:

Various display symbols indicating the current operating state of the Prometheus-C can be displayed permanently, may appear momentarily, or can be set to appear only when a certain function is activated.

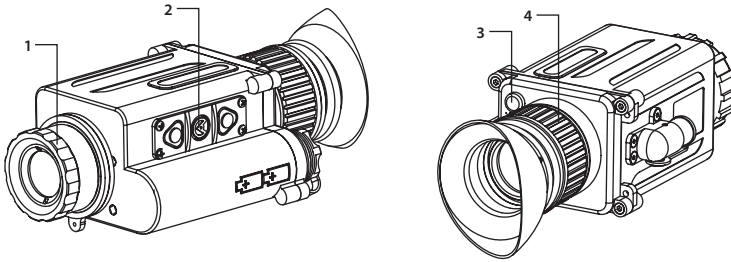


FIGURE 3-3. CONTROLS

TABLE 3-1. CONTROLS AND INDICATORS

ITEM NO.	CONTROL/INDICATOR	FUNCTION
1	Objective Focus Ring	Focuses the objective lens. Adjusts for sharpest view of the scene.
2	Control Panel Buttons	Configures operational settings. See Table 3-2 for button functions.
3	Power Button	Turns the device ON and OFF.
4	Eyepiece Focus Ring	Adjusts the eyepiece diopter.
—	Battery Status Indicator (in the top right hand corner of the display)	The color fill bar in the battery icon indicates the current power level of the internal battery, or remaining battery life. The totally shaded battery icon indicates the fully charged battery. The flashing transparent battery icon indicates a low battery.
—	Image Palette Indicator (in the top left hand corner of the display)	Indicates the selected image palette.
—	Digital Zoom Indicator (in the top center of the display)	Indicates the current value of digital zoom when 2x or 4x zoom activated.

The Prometheus-C button control panel is shown in Figure 3-4.

Table 3-2 contains the button functions and their brief descriptions. The ITEM NO. column of the table indicates the number used to identify buttons in Figure 3-4.

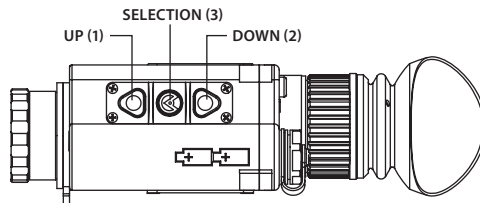


FIGURE 3-4. BUTTON CONTROL PANEL

NOTE:

Each button is responsible for some functions selected by briefly pushing or holding down the button, or using the button in combination with a second one (as described in Table 3-2). Pushing a button for 1.5+ second is considered “holding down.”

TABLE 3-2. BUTTON CONTROLS

ITEM NO.	FUNCTION	DESCRIPTION
1	DISPLAY BRIGHTNESS INCREASE	Push button (1) to increase the screen brightness.
	DIGITAL ZOOM CONTROL	To change the zoom gradually, push and hold button (1).
	UP	Use the UP (1) button to navigate through the items on the menu.
2	DISPLAY BRIGHTNESS DECREASE	Push button (2) to decrease the screen brightness.
	IMAGE PALETTE CONTROL	To scroll through the available palettes, hold down button (2). There are 13 palettes available: White Hot, Black Hot, Fusion, Rainbow, Globow, Ironbow1, Ironbow2, Sepia, Color1, Color2, Ice-Fire, Rain, and OEM.
	DOWN	Use the DOWN (2) button to navigate through items on the menu.
1+2	USER-CONTROLLED MANUAL NON-UNIFORMITY CORRECTION/ FLAT-FIELD CORRECTION (UCMNUC/ FFC)	Simultaneously holding down buttons (1) and (2) starts User-Controlled Manual Non-Uniformity Correction/ Flat-Field Correction (UCMNUC/ FFC).
3	MENU	Holding down button (3) will bring up the Main Menu. The menu includes the following functions: Palette, Enhancement, and Settings.
	SELECTION	Push the SELECTION button (3) to view the settings available for the item selected. To enable left and right navigation (< >) press button (3).
	UCMNUC/ FFC PROCESS INTERRUPTION	Pushing button (3) when the countdown is on the screen will cancel the UCMNUC/ FFC , and the shutter will not interrupt viewing.

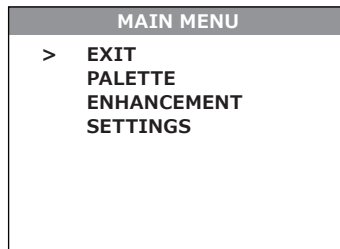
3.2.2 MAIN MENU

Most setup options can be accessed from the MAIN MENU.

To display the MAIN MENU, hold down button (3) on the control panel (Figure 3-4).

Once the MAIN MENU is displayed (Figure 3-5), use buttons (1) and (2) to navigate through items on the menu.

Push button (3) to view the settings available for the item selected.

**FIGURE 3-5. MAIN MENU**

NOTES:

Navigate through sub-menu items by pushing buttons (1) and (2), except where otherwise indicated.

After a menu item is selected, push button (3) to activate the selected function. The function will either be activated or will show <> symbols.

When <> symbols are shown on the menu, the left and the right actions are required. Use button (1) to increase (>) the value, and button (2) to decrease (<) the value. To enter the value and disable left and right navigation, press button (3).

Select EXIT and push button (3) to return to the MAIN MENU.

Palette Menu

The PALETTE menu (Figure 3-6 and Figure 3-7) allows you to select from a range of temperature imaging modes: White Hot, Black Hot, Fusion, Rainbow, Globow, Ironbow 1, Ironbow 2, Sepia, Color 1, Color 2, Ice-Fire, Rain, and OEM Custom.

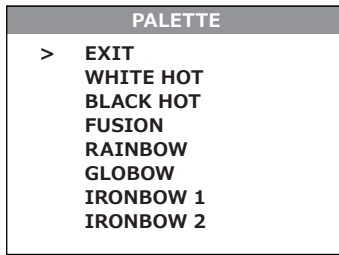


FIGURE 3-6. PALETTE MENU

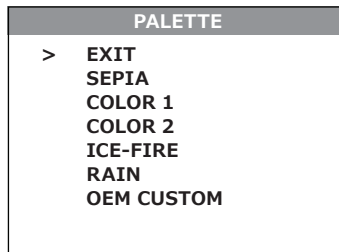


FIGURE 3-7. PALETTE MENU. CONTINUED

NOTE:

To navigate through the items on the two-page PALETTE menu, hold down button (1) or button (2).

The palettes act as color templates for visualization of temperature changes. To navigate through the items on the PALETTE menu, press buttons (1) or (2).

NOTE:

The most popular palettes are White Hot and Black Hot, usually known as inversion. White Hot mode is ideal for spotting targets, while Black Hot is most useful for situational reading.

NOTE:

Training and experience are required to quickly and properly interpret thermal images.

Enhancement Menu

The ENHANCEMENT menu (Figure 3-8) allows users to take advantage of advanced signal processing algorithms to improve image quality under a variety of different thermal environments.

ENHANCEMENT		
>	EXIT	
	CONTRAST	<> 4
	SHARPNESS	<> 60
	SMARTSCENE	<> 15
	GAIN	<> 35
	AGC SPEED	<> 12

FIGURE 3-8. ENHANCEMENT MENU

CONTRAST - Active Contrast Enhancement (ACE) – a digital contrast correction that allows for a smart scene optimization based on dynamic adjustments, where a variety of contrast levels occur depending on relative scene temperatures. The adjustment range is from -8 to +8 with a default value of 4. Lower values will cause hotter objects to have greater contrast, and higher values will cause colder objects to have more contrast.

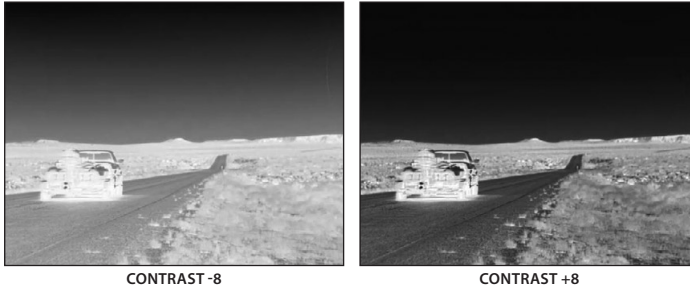


FIGURE 3-9. DIGITAL CONTRAST CORRECTION

SHARPNESS - Second Generation Digital Detail Enhancement (DDE) – a sharpness correction that digitally enhances the picture, significantly sharpens the image, and further reduces image noise. The adjustment range is from -20 to +100 with a default value of 60. Lower values soften image edges. Higher values will sharpen the image, enhance details, and further increase the signal-to-noise ratio.

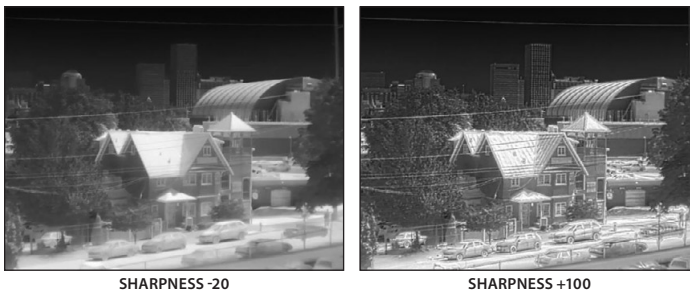


FIGURE 3-10. SHARPNESS CORRECTION

SMART SCENE - Smart Scene Optimization (SSO) – a fine-tuning computational correction that significantly improves overall visual acuity for targets that have thermal signatures similar to the surrounding background. Higher values provide a more linear automatic gain control behavior and objects with similar, but not identical, temperatures can be differentiated with greater accuracy. The adjustment range is from 0 to 100 with a default value of 15.

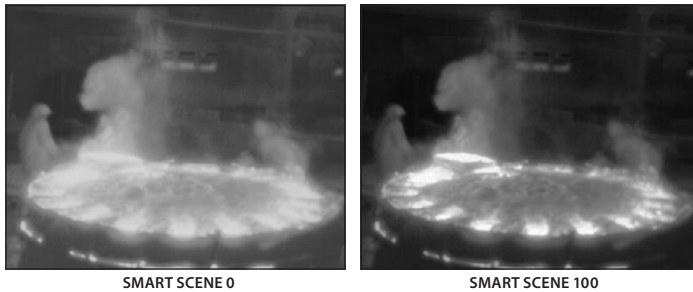


FIGURE 3-11. SMART SCENE OPTIMIZATION

GAIN - Automatic Gain Control (AGC) – a correction that used to automatically adjust the gain to an appropriate range, the weaker the image signal, the stronger the gain. The adjustment range is from 0 to 255 with default value 35.

AGC SPEED – parameter that allows user to control the refresh rate of Automatic Gain Control (AGC). The adjustment range is from 0 to 128 with a default value of 12.



FIGURE 3-12. GAIN CORRECTION

Settings Menu

The SETTINGS menu (Figure 3-13) allows for direct changes to Video Standards and Factory Default settings.

The Firmware (FW) revision number is listed at the bottom of the menu display.

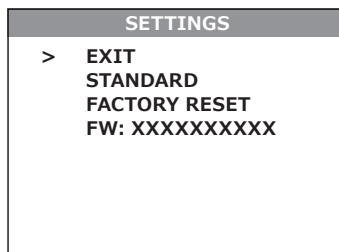


FIGURE 3-13. SETTINGS MENU

STANDARD

Changes the video output standard between NTSC and PAL.

FACTORY RESET

Resets the camera to factory defaults.

SOFTWARE VERSION

Software release is shown in alphanumeric format. When the SELECT button is pushed, the FW (firmware) version will appear.

NOTE:

After configuration is complete, select EXIT on the MAIN MENU and push button (3). All settings will be saved.

3.3 OPERATING PROCEDURES

3.3.1 OPERATING

CAUTION:

DO NOT force the equipment controls past their stopping points.

CAUTION:

To prevent thermal damage to the equipment, never point it, either powered or not, directly at the sun or any other source of high intensity light that the unprotected human eye cannot tolerate (such as a welding arc). To prevent inadvertent exposure to these sources, never leave the equipment without the objective lens cap secured.

Operating procedures are as follows:

1. Remove the Prometheus-C from the carrying case.
2. Remove the objective lens cap.
3. Point the equipment at an object.
4. Activate the Prometheus-C by pressing POWER button. After approximately 3 sec, video of the thermal scene should appear.
5. Adjust the Prometheus-C for your eyesight by turning the eyepiece focus rings CW up to the stop, and then CCW until the display and symbols are as clear as possible. Bring the object into focus by turning the objective focus ring (CW for far focus, CCW for near focus).

NOTE:

The total diopter adjustment range is covered with 2 turns of the eyepiece focus ring.
The total focus range is covered with three quarter turns of the objective focus ring.

6. Using the buttons on the control panel (Figure 3-14), configure the Prometheus-C to adapt it to your situation.

For more information on operational setting procedures, see Part 3.2 (Controls and Display Indications).

- A. Adjust the brightness of the display for your comfort.

Push buttons (1) and (2) to increase/ decrease the display brightness by one level at a time until you reach your desired brightness level.

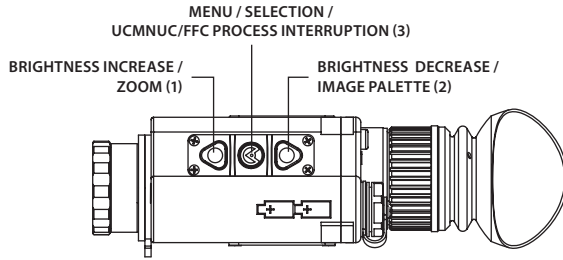


FIGURE 3-14. SETTING BUTTONS

B. Use UCMNUC/ FFC (User-Controlled Manual Non-Uniformity Correction/ Flat-Field Correction) to improve image quality.

Push buttons (1) and (2) simultaneously to start manual UCMNUC/ FFC.

If necessary, interrupt the automatic process by pushing the central button (3) on the control panel during the 5-second countdown, which will appear at the bottom of the display.

C. Use the digital zoom to magnify the central area of the image.

Hold down button (1) to slowly zoom in on the image. The X2 or X4 symbols will appear on the display when digital zoom activated.

NOTE:

Digital zoom allows distant objects to appear larger; however, the resolution will be compromised.

D. Use the image palettes for optimal visualization of temperature changes in the scene.

Hold down the palette control button (2) to scroll through available palettes. The palette name will appear in the top part of the display.

E. Adjust the necessary adjustment using the MAIN MENU. See Part 3.2.2 (Using the MAIN MENU).

NOTE:

After configuration is complete, select EXIT on the MAIN MENU and push the SELECTION button to leave the MAIN MENU. All settings will be saved.

CAUTION:

DO NOT leave the equipment activated when not in use.

3.3.2 PROMETHEUS-C SHUT-DOWN

NOTE:

Shut down the Prometheus-C properly to avoid losing unsaved settings and data.

Shut-down the Prometheus-C as follows:

1. Be sure to save your settings and data.
2. Turn off the Prometheus-C.

3. Place the protective cap on the objective lens.
4. Disconnect the cable (if applicable).
5. Place the protective cap on the connector.
6. Remove the batteries.

CAUTION:

Do not store the Prometheus-C with the batteries still installed.

7. Store the Prometheus-C and all accessories in the carrying case.

PREVENTIVE MAINTENANCE AND TROUBLESHOOTING

4.1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4.1.1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Table 4-1 Preventive Maintenance Checks and Services (PMCS), has been provided so that you can keep your equipment in good operating condition.

Perform functional tests in the order listed in Table 4-1.

Operating procedures are detailed in Chapter 3.

Explanation of Table Entries:

SEQ NO. column. Sequence numbers are for reference and appear in the order required to perform checks and services.

LOCATION OF ITEM TO CHECK/ SERVICE column. Indicates the location and the item to be checked or serviced.

PROCEDURE column. Details the check/ service procedure.

NOT FULLY MISSION CAPABLE IF... column. Indicates what faults will prevent your equipment from operating successfully.

TABLE 4-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

SEQ NO.	LOCATION OF ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF...
PRE-OPERATION CHECKS			
1	Completeness	Open storage/ carrying case and inventory items by comparing with the data in this manual.	Missing items.
2	Soft Carrying Case	Shake out loose dirt or foreign material. Inspect for tears, cuts, excess wear or damage.	
3	Body	Inspect for cracks or damage. Scratches and gouges are OK if operation is not affected. Inspect for missing parts. Clean as required.	Cracked or damaged. Missing parts.
4	Objective Lens Cap	Inspect for cuts, tears and dirt. Clean as required.	Cap is torn or cut. Cap is not secured to the housing of the lens.

SEQ NO.	LOCATION OF ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF...
5	Eyecup	Inspect for cuts, tears and dirt. Inspect for torn, bent or improperly fitting eyecup. Clean as required.	Cup is torn or cut.
6	Battery Compartment and Cap	Inspect for corrosion, moisture, and corroded or defective contacts. Inspect for cap damage or retainer breaks. Inspect rubber gasket for damage.	Contacts are damaged or corroded. Retainer is broken. Cap or rubber gasket is damaged.
7	Lenses	Inspect for cleanliness, scratches, chips or cracks. Clean as required.	Chipped or cracked. Scratches hinder vision through the equipment.
8	Objective Focus Ring	Rotate objective focus ring to ensure it is not too tight or too loose. Range is approximately three quarter turns.	Ring gets stuck, is too loose, or adversely affects the user's ability to properly focus the objective lens.
9	Eyepiece Focus Ring	Rotate eyepiece focus ring to ensure the ring is not too tight or too loose. Range is approximately 2 turns.	Ring get stuck, is too loose, or adversely affect the user's ability to properly adjust the diopter.
10	Connector	Inspect for corrosion, moisture, and corroded or defective contacts. Inspect for cap damage or retainer breaks.	Contacts are damaged or corroded. Cap is damaged. Retainer is broken.
11	Video Cable	Inspect for damage. Inspect the cable connector for corrosion, moisture, and corroded or defective contacts. Clean as required.	Damaged.

OPERATIONAL CHECKS

NOTE:

For a complete operational check, it is necessary to connect a video monitor to the Prometheus-C.

12	Power Button	Install the batteries. Remove the objective lens cap. Point the equipment at an object. Turn the equipment on. Look for a thermal image on the display. Look for a flashing battery icon in the eyepiece viewing area.	No thermal image. Battery icon is flashing (indicates a low battery).
13	Control Board	Ensure the Prometheus-C is responsive to control buttons.	Unresponsive buttons.
14	Video Cable	Connect an external monitor to the Prometheus-C. Point the equipment on an object. Turn the equipment on. Look for an image on the monitor. Turn off the Prometheus-C. Disconnect the monitor.	No image.

POST-CHECK PROCEDURES

- Turn off the equipment.
- Replace the objective lens cap.
- Remove the batteries.
- Return the equipment and all accessories to the carrying case.

4.2 OPERATOR TROUBLESHOOTING

The purpose of troubleshooting is to identify the most frequent equipment malfunctions, probable causes, and corrective actions required.

Table 4-2 lists the common malfunctions that may be found during the operation or maintenance of the Prometheus-C. Perform the tests/inspections and corrective actions in the order listed.

This table does not list all of the malfunctions that may occur with your device, or all of the tests and corrective actions that may be necessary. If you experience an equipment malfunction that is not listed, or is not fixed by the corrective actions listed in the table, please contact Armasight's Customer Service center.

TABLE 4-2. OPERATOR TROUBLESHOOTING

MALFUNCTION	PROBABLE CAUSE/ TEST/INSPECTION	CORRECTIVE ACTION
The Prometheus-C fails to activate.	Batteries are missing or improperly installed.	Insert batteries or install correctly.
	Batteries are dead.	Replace the batteries.
	Batteries, surfaces, or contacts are dirty or corroded.	Clean the contact surfaces with a pencil eraser and/or alcohol and cotton swabs.
	The equipment is damaged.	Please contact Customer Support.
The Prometheus-C is not responsive to control buttons.	The equipment is damaged.	Please contact Customer Support.
Poor image quality.	Check objective lens and eyepiece focus.	Refocus.
	Check for fogging or dirt on objective lens and eyepiece.	Clean the lenses as detailed in Part 4.3.2.
	The equipment is damaged.	Please contact Customer Support.
No image on an external monitor.	Video cable is damaged.	Replace the video cable with a new one. If this is not effective, please contact Customer Support.
	The equipment is damaged.	Please contact Customer Support.
Hindered rotation of the battery cap.	Dirty cap thread.	Clean the thread.
	Damaged cap thread.	Replace the cap with a new one. If this is not effective, please contact Customer Support.
Light is visible around eyecup.	Check eyecup resilience.	If the eyecup is defective, please contact Customer Support.

4.3 MAINTENANCE

4.3.1 GENERAL

The Prometheus-C operator maintenance consists of operational tests, inspections for unit serviceability, cleaning and mounting procedures, and corrective actions (troubleshooting and replacement of a limited number of parts). Maintenance instructions covered elsewhere in this manual (PMCS, troubleshooting, etc.) are not repeated in this section.

CAUTION:

The Prometheus-C is a precision electro-optical instrument and must be handled carefully at all times to prevent damage.

CAUTION:

DO NOT dismantle the equipment.

4.3.2 CLEANING PROCEDURES

Clean the Prometheus-C and optional items as follows:

1. Gently brush off any dirt from the equipment using only a clean, soft cloth.
2. Moisten the cloth with fresh water and gently wipe the external surfaces (except for optical surfaces).

3. Dry any wet surfaces (except for optical surfaces) with another clean, dry soft cloth.
4. Using a lens brush, carefully remove all loose dirt from optical surfaces (objective lens and eye-piece).
5. Dampen a cotton swab with ethanol and lightly and slowly wipe optical surface. Clean the optical surface using circular movements, starting from the center and moving out towards the edge, not touching the lens holder and changing the cotton swab after each circular stroke. Repeat until the optical surface is clean.
6. Clean the battery contact surfaces and contact springs with a pencil eraser and/or alcohol and cotton swabs.

CAUTION:

Thoroughly dry each item before replacing into the storage/carrying case.

4.4 RETURN INSTRUCTIONS

For service, repair or replacement, please email service@armasight.com.

To assist the Service Representative (SR) with determining if the item is repairable, please provide the following information:

1. Serial Number of the defective item (engraved on bottom of the equipment).
2. Thorough description of the malfunction, defect, or damage.
3. An explanation of how the malfunction, defect, or damage occurred, if known.

If the SR determines that the item is under warranty or should be returned for repair, a Return Material Authorization number (RMA#) will be provided.

When returning the Prometheus-C for service or repair, the following procedures should be followed to prevent any additional damage:

1. Make sure the Prometheus-C is free of all contaminants such as dirt or any other foreign material.
2. Remove the batteries.
3. Place the cap over the objective lens.
4. Place the Prometheus-C and accessories in the carrying case.

Place the Prometheus-C and a copy of the test report or detailed description of the failure in a suitable packing/shipping container. Mark the package with the RMA#. Ship the fastest, traceable, prepaid means to:

Armasight Inc.
815 Dubuque Avenue
South San Francisco, CA 94080
USA

A. LIST OF SPARE PARTS

The parts authorized by this list of spare parts are required for operator maintenance. The list includes parts that must be removed before replacing authorized parts.

The PART NO. column indicates the primary number used by the manufacturer, which controls the design and characteristics of the item in terms of its engineering drawings, specifications, standards, and inspection requirement, to identify an item.

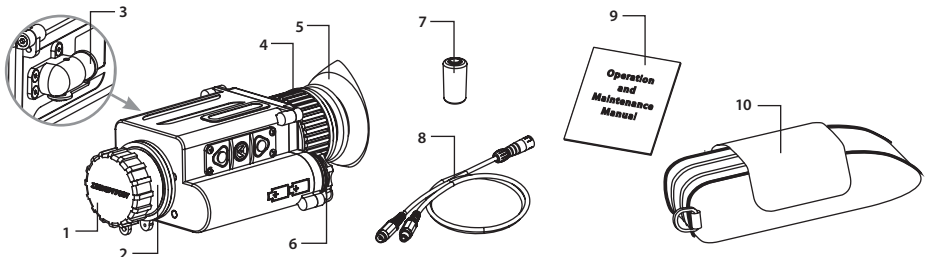


FIGURE A-1. PROMETHEUS-C SPARE PARTS LIST

TABLE A-1. PROMETHEUS-C SPARE PARTS LIST

ITEM NO.	DESCRIPTION	PART NO.
1	Objective Lens Cap	APRCOLC25
2	Objective Lens Assembly	APRCOLA25
3	Connector Cap	APRCCNCP
4	Eyepiece Assembly	APRCEPA
5	Eyecup	APRCEC
6	Battery Cap	APRCBC
7	CR123A Lithium Battery	ALT
8	Video Cable	APRCVC
9	Operation and Maintenance Manual	APRCOMM
10	Carrying Case	APRCCS

B. PRODUCT WARRANTY REGISTRATION CARD

In order to validate the warranty on your product, Armasight must receive a completed Product Warranty Registration Card for each unit, or the user must complete warranty registration on our website (www.armsight.com). Please complete the included form and immediately mail it to our Service Center:

Armasight Inc.
815 Dubuque Avenue
South San Francisco, CA 94080
USA

ARMASIGHT PRODUCT WARRANTY REGISTRATION CARD

PRODUCT INFORMATION

Product Name _____ Purchased From _____
Purchase Date _____ Product Serial # _____

CUSTOMER INFORMATION

Name _____
Address _____
City _____ Country _____ Zip _____
Day Phone # _____ Home Phone # _____
E-mail address _____

.....
Customer Signature Required



Armasight Inc.

815 Dubuque Avenue
South San Francisco
CA 94080, USA

Phone: (888)959-2259

Fax: (888)959-2260

Intl Phone/Fax: (650)492-7755

info@armasight.com



WARNING!

This product contains natural rubber latex which may cause allergic reactions! The FDA has reported an increase in the number of deaths that are associated with an apparent sensitivity to natural latex proteins. If you are allergic to latex, it is a good idea to learn which products contain it and strictly avoid exposure to those products.

www.armasight.com