



Tac-Eye® SMM

(Standard Mobile Monitor)



Six15 encourages customers to read this manual before operating this device.

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PRODUCT SUMMARY

The Tac-Eye SMM is a low power, portable direct view display system with RCA and USB connectivity providing a simple interface to other standard equipment. Developed to support ISR applications, the SMM allows the user to view incoming video on a 5" display from many composite sources including UAVs, UGVs, IR imagers, and other remote camera networks such as perimeter security systems. Simple controls allow the operator to quickly optimize the display to their conditions, with little to no training required.

FEATURE SET

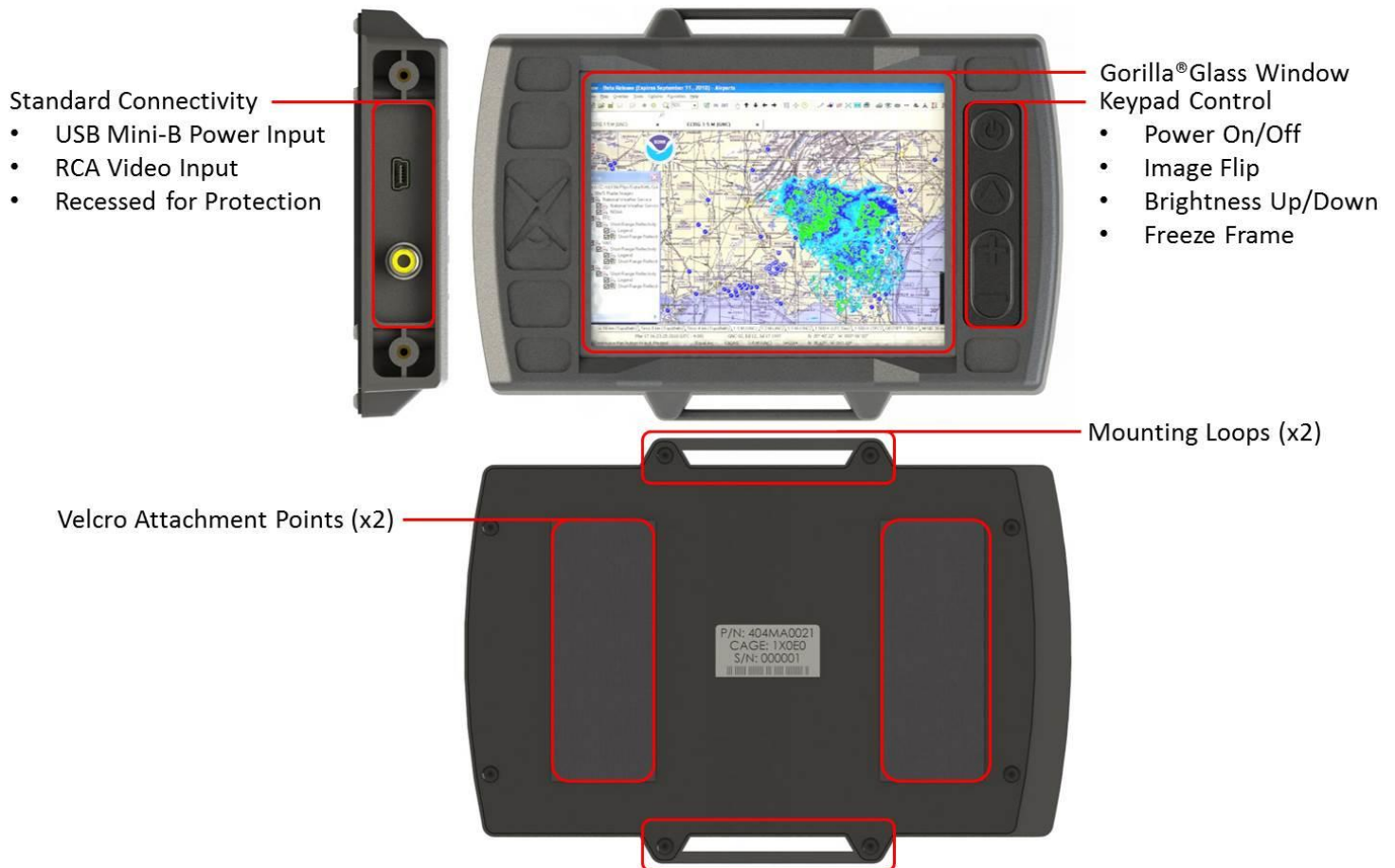


Figure 1: SMM Feature Set

Gorilla is a registered trademark of Corning Incorporated

PRODUCT CONFIGURATIONS

There are multiple configurations (product / accessories) available from Six15 Technologies; your configuration may be comprised of components listed here.

SMM Module

The SMM is shown in Figure 1 and Figure 2. These figures highlight the feature set and the physical dimensions of the device.

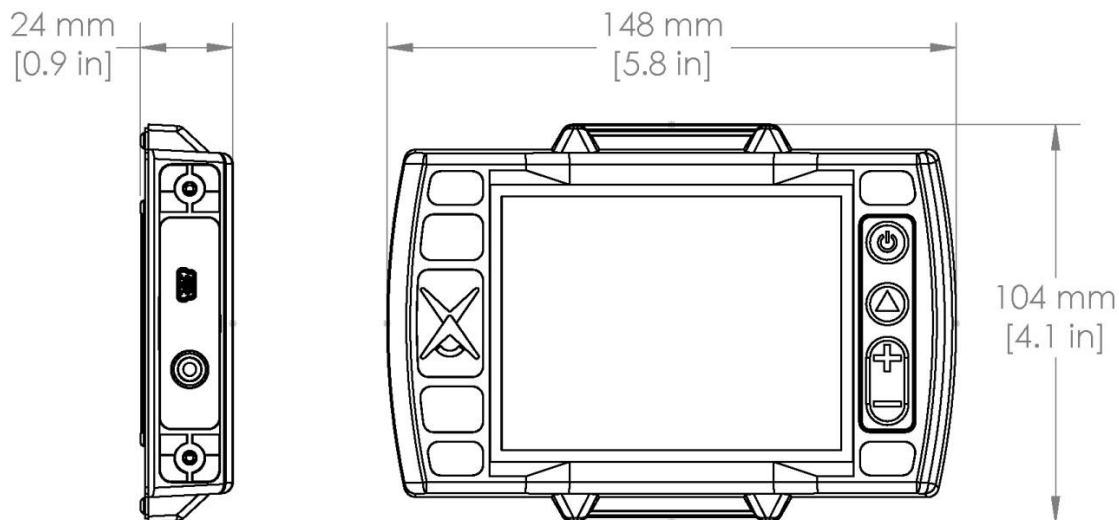


Figure 2: SMM Dimensions

SMM Connectors

The SMM provides industry standard power and video connectivity in the form of USB Mini-B and RCA receptacles. The USB connector supports input power per the USB specification ($5V \pm 5\%$) and the RCA connector supports input video from an NTSC source. Both connectors are recessed in the housing to protect the interfaces. Figure 3 below provides a side view of the SMM, which shows the location of these connectors within the recess. The USB connector is on the left and the RCA connector is on the right.



Figure 3: USB Mini-B and RCA Receptacles

ACCESSORIES

Standard Cable Set

The USB and RCA connections native to the SMM allow for a wide variety of commercially available cable solutions to be used. Two compatible cables are shown below in Figure 4 and Figure 5, and many more can be used with the inclusion of interface adapters like the RCA-BNC converter shown in Figure 6.



Figure 4: RCA Cable



Figure 5: USB Cable



Figure 6: RCA-BNC Converter

SIR Cable Set (use with L-3 CSW SIR device)

A bound 3' cable set (Figure 7) is available for use with the L-3 CSW SIR device. The video and power cables each provide the mating connectors for the SIR and SMM devices so no additional adapters are necessary. The cables are bound together with a series of O-rings to simplify cable management.



Figure 7: SIR Cable Set

Tac-Eye Battery Pack

The Tac-Eye battery pack (Figure 8) is a rugged power source that provides a regulated 5V output from two independently selectable banks of CR123 batteries (2 per bank). Power is provided from a female USB Type-A connector and will power an SMM for over 14 hours.



Figure 8: Tac-Eye Battery Pack

USER INTERFACE

Keypad

An illustration of the SMM keypad is shown below in Figure 9. This image shows the icons on each button for clarity. There are four (4) buttons:



Figure 9: SMM Keypad

1. **Power** – This button turns the device off and on. By default, the SMM will turn on immediately upon connection to a power source. If power is connected, but there is no video source detected, the SMM will produce a red hashed border on the display. All configuration modes and settings including image orientation and brightness levels are saved through power cycles (power button depression or power connection cycles) and the SMM will always power up in its last configuration.
2. **Image Flip** – This button rotates the image 180° allowing the SMM to be mounted on either side of the body with the cable exits in either direction to maximize utility and support various usage models.
3. **Brightness Up** – This button increases display brightness.
4. **Brightness Down / Freeze Frame** – This button decreases display brightness with a momentary depression. When held down this button provides a 'Freeze Frame' feature providing the user time to inspect, record, and communicate data. When in this mode the video frame is outlined by a blue hashed border as visual feedback that this mode is active. Releasing this button from 'Freeze Frame' returns the display to the incoming video stream without decreasing display brightness.

MOUNTING

Velcro Option

There are two Velcro attachment points on the rear face of the SMM. These attachment points, highlighted at right in Figure 10, include the 'hooks' required to mate to the 'loops' found on standard issue vests, pouches, and other body worn carriage solutions.

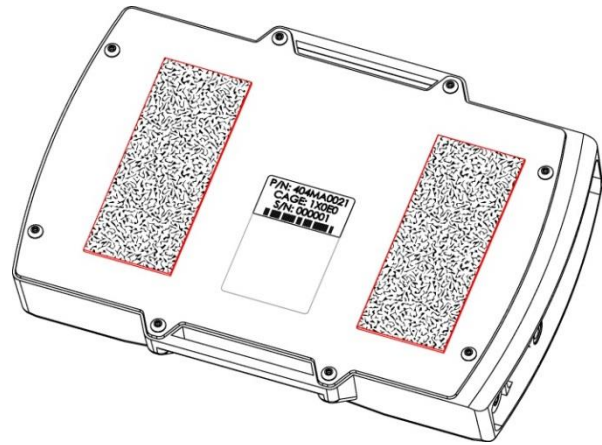


Figure 10: Velcro Attachment Points

Loop Option

There are two mounting loops on the long sides of the SMM. These mounting loops accept straps up to 1.5" wide and can be used independently to hang the SMM, or in tandem to bind the SMM in the intended location. Straps less than 1" wide and less than 3mm thick can also be used to mount the SMM to a MOLLE interface.

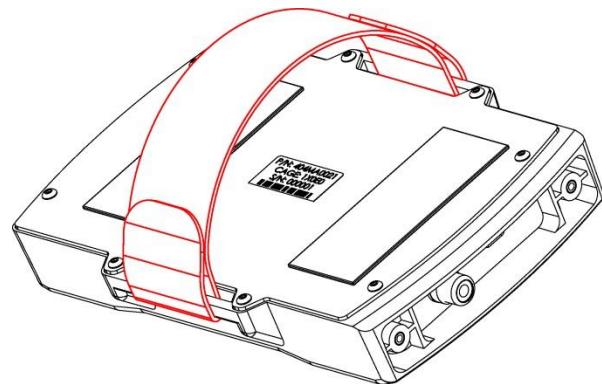


Figure 11: Mounting Loops

CLEANING AND CARE

The Tac-Eye SMM is durable and easy to maintain. It is recommended as with any device that a better user experience is tied to product maintenance. To ensure the SMM remains at its functional peak, take afforded opportunities to clean the device using the following instructions.

Instructions:

1. For light cleaning, wipe the SMM down with a damp cloth.
2. To remove caked mud or debris, remove most by hand before wiping down with a damp cloth. If required, allow the mud/debris to soak and soften, then reuse the damp cloth, rinsing cloth between uses with fresh water.
3. To decontaminate an SMM, wipe it down with isopropyl alcohol.

SAFETY

- Be sure that cables are routed properly to prevent entanglement. The SMM uses RCA and USB connectors that are implemented to break away as a safety measure, but attention to routing can still improve the user experience.
- As with any other device, it is recommended to read the entire user manual before operating the SMM.

WARNINGS

- Never leave the display of the SMM directly exposed to the sun or other intense light source. This can damage the display.
- Do not attempt to repair an SMM or associated accessories; contact Six15 Technologies to report a non-conforming product. Attempting to disassemble a system voids the warranty on the product.

TROUBLESHOOTING

Problems and Solutions

Problem	Possible Solutions*
I plug in the SMM and nothing happens.	<ol style="list-style-type: none"> 1. The SMM may be configured to wait for power button depression to turn on, try pressing the power button. 2. The system may not be powered, verify support equipment is powered and working properly and that all interconnect is properly mated.
I have no video image in the SMM.	<ol style="list-style-type: none"> 3. The brightness may be turned all the way down, try increasing the brightness. 4. The system may not be turning on, or may have a poor connection, see Solutions 1 and 2.
The SMM only displays a red hashed border.	<ol style="list-style-type: none"> 5. The SMM intentionally displays a red hashed border when it is on, but has no video input. Verify the video source is powered and operational, and that the video connection is fully mated.

Table 1: Troubleshooting Options

* If any of the proposed Solutions do not eliminate the problem, contact Six15 Technologies for further resolution.

Technical Support

If there is trouble using the SMM you are encouraged to contact Six15 Technologies to investigate and report the problem (contact information on back page). To ensure expedient resolution of any issue be prepared to provide:

- Both the Model and Serial Numbers of the SMM (on rear label).
- A list of all connected equipment.
- A description of the operational environment.
- The step by step process that has led to, or continues to demonstrate the failure.

SYSTEM SPECIFICATIONS

Parameter	Description
Display Type	TFT LCD
Resolution	640x480
Color Depth	24 bit (8 bits per color), 16.7M colors
Contrast Ratio	600:1
Viewing Angle	> 50° in all directions
Display Protection	Gorilla® Glass window
Backlight / Brightness	LED / 500 nits
Backlight Brightness Increments	16
Size	5 3/4" x 4" x 7/8"
Weight	255 grams / 9 ounces
Gray Levels	Up to 256 per primary color
Max Brightness	500 nits
Display Inputs	RCA (NTSC, RS-170)
Power Input / Consumption	5V ± 5% / < 2.1W
Readiness	Image < 500ms from application of power
Operating Temperatures	-20°C to +70°C
Storage Temperatures	-30°C to +80°C
High Temp / Humidity Operation	+60°C @ 90% Humidity
Ingress Protection	IP-52

Table 2: Specifications List

REGULATORY

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



WARRANTY INFORMATION

What This Limited Warranty Covers

Six15 warrants that the Six15 hardware product and all the internal components of the product that you have purchased from Six15 are free from defects in materials or workmanship during the Limited Warranty Period. The Limited Warranty Period for Six15 products is one (1) year from the date of product purchase. Proof of purchase may be required for warranty service.

During the Limited Warranty Period, Six15 will repair or replace the defective component parts or the hardware product. In the unlikely event that your Six15 product has a recurring failure, Six15, at its discretion, may elect to provide you with a replacement unit of Six15's choosing that is at least equivalent to your Six15 branded product in hardware performance. Six15 reserves the right to elect, at its sole discretion, to give you a refund of your purchase price instead of a replacement.

Any repair to or replacement of any product or part is warranted to be free from defects in materials or workmanship for the remainder of the Limited Warranty Period or ninety (90) days, whichever is longer.

What This Limited Warranty Does Not Cover

This Limited Warranty does not apply to expendable parts. This Limited Warranty does not extend to any product from which the serial number has been removed or that has been damaged or rendered defective (a) as a result of accident, misuse, abuse, or other external causes; (b) by operation outside the usage parameters stated in the user documentation that shipped with the product; (c) by the use of parts not manufactured or sold by Six15; or (d) by modification or service by anyone other than (i) Six15, (ii) a Six15 authorized service provider, or (iii) your own installation of end-user replaceable Six15 or Six15 approved parts, if available for your product in the servicing country.

IMPORTANT EXCLUSIONS AND LIMITATIONS

EXCEPT AS EXPRESSLY SET FORTH IN THIS LIMITED WARRANTY, SIX15 EXPRESSLY DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IF YOUR SIX15 BRANDED HARDWARE PRODUCT FAILS TO WORK AS WARRANTED ABOVE, YOUR SOLE AND EXCLUSIVE REMEDY SHALL BE REPAIR OR REPLACEMENT OF THE PRODUCT. IN NO EVENT SHALL SIX15'S LIABILITY EXCEED THE PRICE YOU PAID FOR THE PRODUCT.

SIX15 IS NOT LIABLE FOR ANY DAMAGES CAUSED BY THE PRODUCT OR THE FAILURE OF THE PRODUCT TO PERFORM, INCLUDING ANY LOST PROFITS OR SAVINGS, OR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, IRRESPECTIVE OF WHETHER YOU ADVISED SIX15 OF THE POSSIBILITY OF SUCH DAMAGES. SIX15 IS NOT LIABLE FOR ANY CLAIM MADE BY A THIRD PARTY OR MADE BY YOU FOR A THIRD PARTY.

How to Obtain Warranty Service

If your product needs service, refer to the Six15 website at www.Six-15.com or your product's manual. You can also call the Six15 Support Center toll free (855) 844-4655.

Local Laws and This Limited Warranty

This Limited Warranty gives you specific legal rights. You may also have other rights that vary from state to state or country to country. Some states or countries do not allow certain exclusions of warranties or limitations of certain types of damages. Accordingly, certain exclusions or limitations might not apply to you. Consult your applicable laws to determine the full scope of your legal rights.



CONTACT INFORMATION

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