



Volunteer Marine Rescue Brisbane Inc

Providing a Safer Marine Environment for Our Community

95 Allpass Parade, Shorncliffe Qld 4017

PO Box 201, Sandgate Qld 4017

t: 07 3269 8888 f: 07 3269 2245

e: management@vmrsandgate.net.au w: vmrbrisbane.com.au

Use of FLIR Thermal Night Vision Camera

1.0 Introduction

The FLIR Thermal Night Vision Camera Model T300 mounted on the forward hardtop of Sandgate 1 is used primarily at night as an added aid to the safe navigation of our vessel and to assist in search operations involving lost persons in the water. Its use during daylight hours is limited and therefore should not be used unnecessarily.

2.0 References

Raymarine Users Guide (covered in this SOP)

3.0 Detailed Information

The system comprises of a Thermal camera mounted on the Vessel's hardtop and capable of panning through 360° in the horizontal plane and elevate to plus or minus 90°, relative to the horizon, in the vertical plane.

The camera is controlled by a JCU (Joystick Control Unit) installed in the Port console in front of the Navigator's position.

3.1 Turning On

The unit is activated by the third Circuit breaker down on the left-hand side of the Console in front of the Helm. This Circuit Breaker is marked "CAMERA". Once "on" go to the JCU and press the "on/off" button in the top left hand corner of the JCU. The JCU will light up and go through a self test, during which time you will hear the camera on the hardtop above also go through a self test and then be ready for use. Wait until JCU completes its searching and finds camera. JCU should display "T-SERIES 7040".

This is all networked into the existing Raymarine Axion Pro12 Multi Function Units on each console and the camera display is accessed via the "Page" button on the display and selecting the button indicated by a "FLIR" icon. Either or both displays can be used at any one time.

Select the FLIR icon (or any icon with video or FLIR included in the name) from the home screens. If you encounter "No video source detected", select menu icon (hamburger menu at top right of screen) and choose "T-SERIES 7040".

Camera can be controlled by Axiom touch screen. Alternatively the manual JCU can also be used to control the camera (refer Appendix A).

3.2 Turning Off

Camera must be parked prior to shutdown. Select menu icon (hamburger menu at top right of screen) from Axiom screen, then select "Park Camera".

3.3 Thermal Camera Standby and Shutdown

Standby mode can be used to temporary suspend the thermal camera's functions when the camera is not needed for a prolonged period.

SOP: VES023	Date: 04/04/2021	Rev: 1	Review: 04/04/2026	Authorised: Snr Vice
-------------	------------------	--------	--------------------	----------------------



Volunteer Marine Rescue Brisbane Inc

Providing a Safer Marine Environment for Our Community

95 Allpass Parade, Shorncliffe Qld 4017

PO Box 201, Sandgate Qld 4017

t: 07 3269 8888 f: 07 3269 2245

e: management@vmrsandgate.net.au w: vmrbrisbane.com.au

When in standby mode the camera:

- Does NOT provide a live video image
- Moves the camera to its “stowed” (parked) position (lens facing down into the camera base) to protect the camera optics.
- Engages its pan/tilt motors to hold the camera in place in rough seas.

Press and hold ON/OFF button on JCU. While holding the button down, the JCU will count down 3,2,1, then 0 and the screen will show “Power Menu”. After the countdown you can release the button.

“Puck” down to reveal the following headings:

JCU Standby: (Not necessary – do not use)

System Standby: (Use to put the system to sleep or prior to turning off)

Calibrate JCU: (Already done – do not select)

Cancel: (Exits the “Power Menu”)

When you select “System Standby” (push puck) the JCU screen will say “Goodbye”. The system will be in standby mode. To re-activate, if required, press the ON/OFF button for several seconds and the system will be alive and operating once again. Alternatively when you see the “Goodbye” on the JCU screen and you wish to turn the system off completely, you can now switch the main circuit breaker on the dashboard console to “OFF”.

3.4 Thermal Camera Cleaning

The camera housing and lens will require occasional cleaning. Raymarine suggests that you clean the lens when image quality degradation is noticed or excessive contaminate build up is seen.

Clean the interface between the yoke and the base often to prevent accumulation of debris or salt deposits.

When cleaning:

- Do **NOT** wipe the lens window with a dry cloth, as this could scratch the coating.
- Do **NOT** use abrasive, or acid or ammonia based products.
- Do **NOT** pressure wash.

Particular care should be taken when cleaning the lens window, this has a protective anti-reflective coating which may be damaged by improper cleaning.

- a) Switch off the power to the unit.
- b) Clean the camera body with a clean, soft cotton cloth. You can moisten the cloth and use a mild detergent if required.
- c) Clean the camera lens.
 - Rinse the lens with fresh water to remove all dirt particles and salt deposits, and allow to dry naturally.
 - If any spots or smears remain, very gently wipe the lens window with a clean microfibre cloth or soft cotton cloth.



Volunteer Marine Rescue Brisbane Inc

Providing a Safer Marine Environment for Our Community

95 Allpass Parade, Shorncliffe Qld 4017

PO Box 201, Sandgate Qld 4017

t: 07 3269 8888 f: 07 3269 2245

e: management@vmrsandgate.net.au w: vmbrisbane.com.au

- If necessary, use isopropyl alcohol (IPA) or a mild detergent to remove any remaining spots or marks.

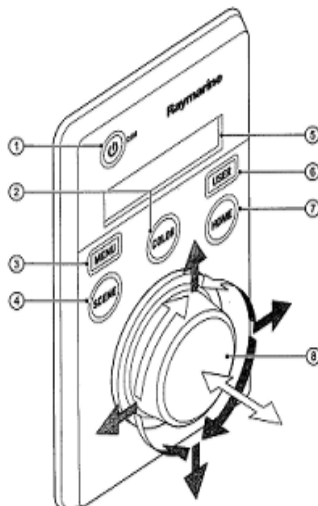
4.0 Summary

The FLIR Thermal Night Vision Camera is a very useful item of equipment but it needs careful maintenance if it is to remain serviceable. All Masters should read this SOP and instruct their crew members in its operation and its cleaning requirements

5.0 Appendix A

3.2 The JCU Unit

The functions of the JCU unit are shown and described in the following illustrations:



1	<p>Stand By/Dim</p> <ul style="list-style-type: none"> • Press and hold – “Wake” the camera from stand by mode or access the Power Menu. • Momentary press – change JCU display brightness (3 different levels.)
2	<p>Colour</p> <ul style="list-style-type: none"> • Momentary press – Cycle through the available colour settings. (Greyscale, Red, Sepia, Rainbow, and Fusion) • Press and hold – Perform FFC (Flat Field Correction) operation. This performs a correction for the current ambient temperature.
3	<p>Menu</p> <ul style="list-style-type: none"> • Access the camera set up menu’s <p>NOTE: This camera has been set up to suit our particular application - do not press this menu button to alter any configuration.</p>
4	<p>Scene</p> <ul style="list-style-type: none"> • Short Press – Select between the available scene presets.



Volunteer Marine Rescue Brisbane Inc

Providing a Safer Marine Environment for Our Community

95 Allpass Parade, Shorncliffe Qld 4017

PO Box 201, Sandgate Qld 4017

t: 07 3269 8888 f: 07 3269 2245

e: management@vmrsandgate.net.au w: vmrbrisbane.com.au

5	<p>Display</p> <ul style="list-style-type: none"> • Provides information regarding the JCU and camera status.
6	<p>User - A programmable button for accessing a favourite setting or function not provided on the other keys. The default operation is the Reverse Video Function (white-hot / black hot)</p> <ul style="list-style-type: none"> • Short press – perform the programmed action. • Press and Hold – Program the USER button with another function. <p>The USER button can be programmed for the following functions:</p> <ul style="list-style-type: none"> • Search Settings • Hide/Show all icons • Reverse Video - (DEFAULT SETTING) • Rearview Mode • Surveillance Mode
7	<p>Home</p> <ul style="list-style-type: none"> • Momentary Press – Return camera to home position. • Press and Hold – Set current position as camera home. (Preset – Do Not Change) • 4 x press – Reset the camera (realign home and slow positions (Preset – Do Not Change))
8	<p>Puck (the round dial) – Use the puck to control the camera and navigate the setup menu's</p> <p>Control the Camera:</p> <ul style="list-style-type: none"> • Move up, down, left, right – Pan / Tilt camera. • Press down (and hold) – Zoom thermal image in. • Lift Up – Zoom thermal image out. • Double-click (2 quick presses) – Pause thermal image. (Move puck in any direction to unfreeze) <p>Navigate setup menus:</p> <ul style="list-style-type: none"> • Move up, down – Scroll through menu options. (Preset – Do Not Change) • Press down on puck – Select highlighted menu option. (Preset – Do Not Change)



Volunteer Marine Rescue Brisbane Inc

Providing a Safer Marine Environment for Our Community

95 Allpass Parade, Shorncliffe Qld 4017
 PO Box 201, Sandgate Qld 4017
 t: 07 3269 8888 f: 07 3269 2245

e: management@vmrsandgate.net.au w: vmbrisbane.com.au

ICON	DESCRIPTION	ICON	DESCRIPTION
	Camera Direction Indicator		Rear-view mode – image is flipped horizontally
	Camera Home Position		Zoom setting – 2 x zoom
	Scene preset mode for night conditions		Zoom setting – 4 x zoom
	Scene preset mode for daytime conditions		Image paused
	Scene preset mode for night docking		Single active controller on network
	Scene preset mode for identifying people or objects in the water		

3.3 FFC (Flat Field Correction)

Periodically the camera will perform a Flat Field Correction (FFC). This will fine tune the thermal image to suit the current ambient temperature.

The FFC operation is indicated by a momentary pause and a GREEN rectangle displayed in the upper left of the thermal video image.

3.4 Image Adjustments

a) Thermal Camera Screen Presets

Scene presets enable you to quickly select the best image setting for the current environmental conditions.



Night Running



Day Running



Night Docking



Search



Volunteer Marine Rescue Brisbane Inc

Providing a Safer Marine Environment for Our Community

95 Allpass Parade, Shorncliffe Qld 4017
 PO Box 201, Sandgate Qld 4017
 t: 07 3269 8888 f: 07 3269 2245

e: management@vmrsandgate.net.au w: vmbrisbane.com.au

Although the preset names indicate their intended use, varying environmental conditions might make another setting more preferable.

For example, the night running scene preset might also be useful while in a harbour. You may find it beneficial to experiment with the different screen presets to discover the best preset to use for different conditions.

b) Thermal Camera Colour Modes

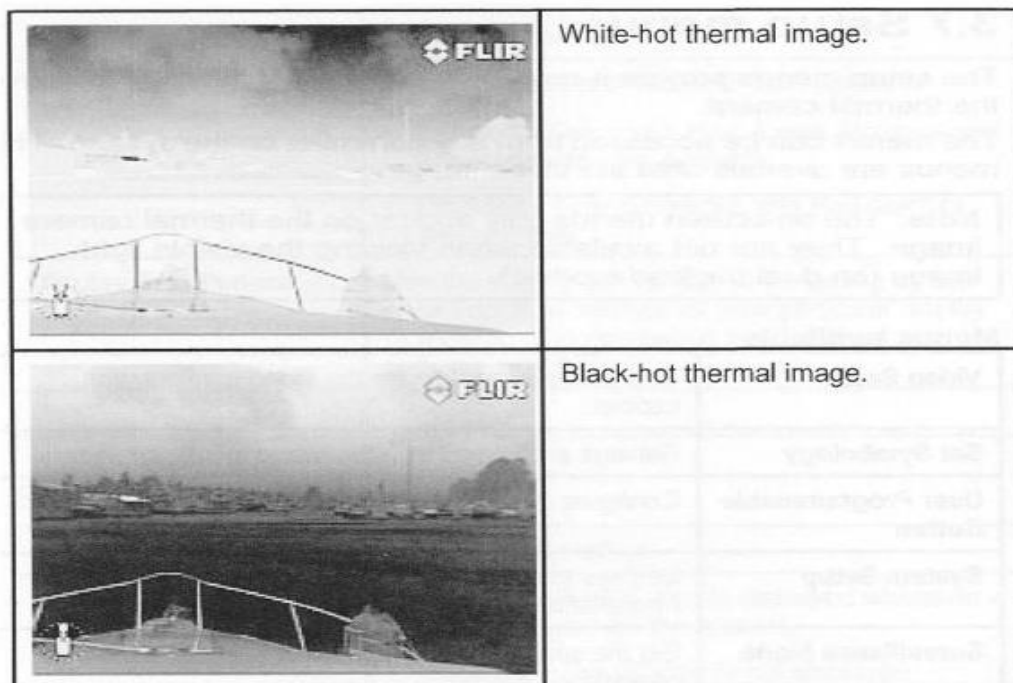
A range of colour modes is available to help you distinguish objects on-screen in different conditions.

The COLOUR soft key switches the thermal camera image between screen colours. There are five colour modes available. Our unit's default is greyscale however, you may find red is better at night. This is something you can experiment with.

c) Thermal Camera Reverse Video

You can reverse the polarity of the video image to change the appearance of objects on-screen. (Press "USER" button then select "Reverse Video")

The reverse video option (video polarity) switches the thermal image from white-hot to black-hot. The difference between white-hot and black-hot is shown below.



You may find it useful to experiment with this option to find the best setting to suit your needs.

d) Thermal Camera Surveillance Mode

In surveillance mode the camera pans left and right continuously.

The camera continues to pan until surveillance mode is disabled, or the JCU "puck" is used to move the camera. When this occurs the camera does not automatically resume surveillance mode and the mode must be enabled again if required.