Integration with Garmin Displays

Application Note

FLIR M-Series and MD-Series Thermal Camera
Garmin GPSMAP® 8000 Glass Helm Series
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References
FLIR M-Series Installation Guide (Document # 432-0003-00-12)
FLIR M-Series Operators Manual (Document # 432-0003-00-10)
FLIR MD-Series Installation Guide (Document # 432-0010-00-12)
FLIR MD-Series Operators Manual (Document # 432-0010-00-10)
GPSMAP® 8000 Glass Helm Series Owner’s Manual (Document # 190-01557-00_0A)
Overview
This document describes how to integrate a FLIR M-Series or MD-Series thermal camera with the Garmin GPSMAP® 8000 Glass Helm Series Multi-Function Display (MFD). The display can be used to view the video from the camera and to control the camera. Depending on the camera type and the installation, a user may choose to control some of the following features on a camera:

- Zoom /Pan/Tilt
- Image settings (Scene settings, Color Palette)
- Accessing on-screen menu functions

In general, there are several different ways to control the FLIR M-Series and MD-Series cameras, including one or more of the following options:

- A FLIR Joystick Control Unit (JCU)
- A web browser or FLIR Sensors Manager (FSM) software running on a PC or Mac
- A web browser or mobile app on a smart phone
- A third-party display or chart plotter, such as the Garmin GPSMAP® 8000 Glass Helm Series

A user may be able to control all of the camera features using certain connection options (such as the FLIR JCU), while control may be limited with other connection options, such as a smartphone app or a third-party display.

It is possible to use more than one of the listed options for controlling the camera; for example, a JCU can be used in addition to the Garmin display. Refer to the camera installation guide for more detailed information about connecting multiple control devices to a network.

Support
If additional support is needed, please contact FLIR Technical Support either online or by telephone. All owners are encouraged to register their camera through the online support site.

Online: http://support.flir.com/
Telephone: +1-888-747-3547

Scope
This document provides a brief guide to connecting and configuring the necessary components for using the Garmin MFD with the FLIR camera. The user should have a basic understanding of the installation of these devices and the cables and interconnections between them. Complete details about the MFD functions, configuration of cameras, IP networks and so on are generally beyond the scope of this document.

FLIR Certified Maritime Integrator (FCMI) Training
This configuration guide provides a brief description of the setup of these devices. For installers and integrators that are interested in a more advanced level of configuration, the FLIR Certified Maritime Integrator (FCMI) certification program offers hands-on training with a variety of FLIR cameras, and focuses on integration design and installation with other third-party devices and equipment. For more information, contact your local FLIR representative or visit one of the following web sites:

http://www.flir.com/training
System Connections

**Warning:** Do not connect a Power over Ethernet (PoE) Power Source Equipment (PSE) device directly into the Ethernet port of the Garmin display. Damage to the camera or the display could result and will void the manufacturer's warranty.

The Ethernet interface on the FLIR M-Series camera is a PSE device and conforms to IEEE 802.3af-2003 specification, commonly known as PoE. *This powered network interface should never be connected directly to the Garmin display.* It is necessary to use the Garmin Marine Network PoE Isolation Coupler (Garmin P/N 010-10580-10) to connect the camera to the display.
Similarly the FLIR PoE Injector is a PSE device and the powered interface (marked with a red label) should never be connected directly to the Garmin display. The PoE Injector is commonly used to provide power to the MD-Series camera.

Note, a Garmin PoE Isolation Coupler (Garmin P/N 010-10580-10) should also be used to connect the Data In (non-powered) port of the PoE injector to the display.
Multiple Control Devices
In some installations, a FLIR JCU will be connected to the Garmin network also. Typically a Garmin GMS 10 Network Port Expander or similar device will be used as a network switch to interconnect the network devices.
Supported FLIR Camera Models

- M-Series - M324XP
- M-Series - M625XP
- M-Series - M324L
- M-Series - M625L
- M-Series - M618CS
- M-Series - M612L
- MD-Series - MD324
- MD-Series - MD625

Note: FLIR M-Series cameras require the firmware package version 2.5.8 or newer. All M-Series cameras shipped prior to September 2013 will require a firmware update. To determine the current firmware version, refer to the Troubleshooting section below.

As described earlier, M-Series installations require the following Garmin accessory - Coupler, Marine Network PoE Isolation P/N 010-10580-10.

If the M-Series has a single video connection (XP models), it is recommended the video cable from the camera should be connected to the Video 1 port on the display. For M-Series cameras that have a thermal imager and a visible (lowlight or color) camera, it is generally possible to connect both video cables to the MFD and view both video images at the same time. However it will only be possible to control the camera with one video channel. It is recommended the cable labeled “VIS/IR” should be connected to the Video 1 port and used for control.

The FLIR MD-Series was released more recently than M-Series, and all cameras shipped to date have the required version for compatibility with the Garmin display. It is recommended the video cable from the camera should be connected to the Video 1 port on the display.

Firmware updates and instructions are available from the online support site. Go to http://support.flir.com/ to download the latest version of firmware, or contact your local FLIR representative or call 877-773-3547 inside the US.

Supported Garmin GPSMAP 8000 Series

- GPSMAP 8008
- GPSMAP 8012
- GPSMAP 8015
- GPSMAP 8208
- GPSMAP 8212
- GPSMAP 8215
- GPSMAP 8500 Black Box
- GPSMAP 8530 Black Box

Supported GPSMAP 8000 Series MFD's will require software version 4.0 or newer. Refer to the user documentation that comes with the display to determine the current software version. To update the display, also refer to the user documentation, or refer to the Garmin web site: http://www.garmin.com/support/software/marine.html

Garmin Marine Network Considerations

When connecting devices to the Garmin Marine Network, observe these considerations:

- A Garmin Marine Network cable must be used for all Garmin Marine Network connections
- Read the installation documentation that comes with the display and follow all recommendations
- Additional Garmin Marine Network cables and connectors are available from Garmin
Setup
Turn off all power connections to the devices. Make the appropriate connections between the devices, as shown above. Perform the following steps in the order given below.

1. Power on the GPSMAP 8000 Series display. The GPSMAP 8000 Series must be started first - it will provide an IP address to the connected FLIR camera
2. Power on the M-Series camera, or PoE Injector for the MD-Series camera
3. Set up the GPSMAP MFD to display the video from the camera
   a. From the GPSMAP Home screen select the Video option.
   b. Select Menu, then select Video Menu.
   c. Select the Source button. Assuming everything is connected correctly, the first available source listed will be the FLIR camera (for example, M618CS). It may take up to five minutes to appear after starting the FLIR camera. If the camera is not displayed, refer to the troubleshooting steps below.
4. On the GPSMAP MFD, select the video channel that will be used to control the camera
   a. From the Video Menu select Video Setup option.
   b. Select Set Input option.
   c. Select the video input your FLIR camera is connected to. This associates camera control to either Video 1 or Video 2.
   d. Confirm that it is possible to control the camera. When the video image is touched, a pop-up control will be displayed. Touch the “+” button to zoom in the camera, “-” to zoom out.

Camera Control
From the Video Menu, most functions that are available from the JCU are also available on the MFD. For M-Series cameras that have both thermal and visible (lowlight or color) video, the IR/Visible button can toggle between the video sources. The Change Colors button works like the Color button on the JCU, and the Change Scene button works like the Scene button on the JCU. To access the camera’s on-screen menu, select Video Setup, then Next Page twice to get to the FLIR Menu button.
## Troubleshooting

### Unable to view video
Check the connections to the camera, and make sure it is receiving power. If possible, confirm there is a video signal by temporarily plugging the video cable into another video monitor.

If the **M-Series** camera is in Standby mode, no video will be displayed. Generally, the camera will be in the Park position if it is in Standby mode. Confirm the camera goes through the initial pan/tilt initialization when the power is turned on. Be sure to allow time for the camera and the display to fully boot up and for the MFD to “discover” the camera. When the camera is first powered on, it will temporarily display the FLIR splash screen on the video for a few seconds, and then the video will stop again until the JCU or MFD connects to the camera and brings it out of Standby mode.

### Unable to control camera
Review the Setup steps above, in particular Step 4, to ensure the correct video channel has been selected with the **Set Input** button. If the pop-up control does not display when the video screen is touched, switch to a different input.

### Determine the Camera Firmware Version
Use the JCU to access the camera’s on-screen menu by pressing the Menu button and select the About/Help menu entry. In the About/Help display, the current version will be on the 4th line, above the MCU version; for example: “v2.5.9.17 Built 13-Aug-2013”. This version refers to the Nexus Server version. For the Firmware Release 2.5.8, the correct Nexus Server version is v2.5.9.17.