# Product overview

The IONODES **ION-R100** IP video decoder uses the IP-video output from your M100/M200 thermal camera, and converts it to a component-video signal suitable for an analog display.

This Quick Start Guide describes how to connect the IP video decoder, and how to configure it to work with your M100/M200 thermal camera.

Parts supplied

The parts supplied with the IP video decoder are shown below.
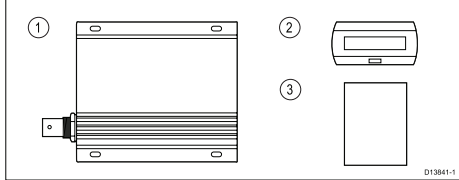
1. IONODES **ION-R100** IP video decoder
2. Suppression ferrite
3. Quick Start Guide

Before you start

Before you start installing and configuring the IP video decoder, ensure that you have the following items:

1. **Ethernet network switch** with a minimum of four free ports.
2. (OPTIONAL) **Power over Ethernet (PoE) injector**. If your Ethernet network switch offers PoE on at least one of the free ports, you will NOT need a PoE injector to power the IP video decoder.

3. **Cat 5e network cable** with male RJ45 connectors at each end (maximum length 100 m). If you are using a PoE injector, you will need two network cables.

4. **Coaxial video cable** fitted with a male BNC connector that connects to **VIDEO OUT** on the IP video decoder. For optimum video quality, use high-quality marine-grade RG59 or RG6 cable, such as Ancor part no. 151025.

5. **Video display** capable of displaying the analog composite video signal from the IP video decoder (for example, an analog monitor).

6. *For initial configuration only*, a Windows **laptop computer, or PC** with the following software installed:

   - Microsoft **Internet Explorer** web browser (version 7 or above).

   - Microsoft **Silverlight** (to install, go to www.microsoft.com/getsilverlight from Internet Explorer. If Silverlight is already installed, the version number is listed; otherwise, follow the on-screen instructions to complete the Silverlight installation).

   - IONODES **IonConfigTool** utility (this is *required* to locate the IP video decoder on your network during configuration. Download the tool from the "Support" area at www.ionodes.com).

> **Note:** Internet Explorer is the ONLY web browser that supports Silverlight, which is required to access the IP video decoder configuration pages. The latest versions of the Microsoft Edge, Google Chrome, Mozilla Firefox, and Opera browsers do NOT support Silverlight.

The listed items are in addition to the M100/M200 thermal camera, and JCU-3 remote keypad. You may also require additional accessory cables to install a full M100/M200 system.

Connections overview

Your product includes the following connectors.

IP video decoder connectors

Connector	Description	Connections and cable
	Female RJ45 Ethernet network port (supports PoE). Labelled **ETHERNET/PoE** on the IP video decoder body.	**Connects to** Ethernet network port on: • Ethernet network switch capable of providing Power over Ethernet, OR • PoE injector data-out, required if the network switch isn't PoE capable. **Cable**: RJ45–to-RJ45 Cat 5e network cable (maximum length 100 m).
	Female BNC connector for analog composite video output (NTSC or PAL). Labelled **VIDEO OUT** on the IP video decoder body.	**Connects to** composite analog video-in connector on: • dedicated video display or monitor, OR • multifunction display (MFD). **Cable**: Coaxial video cable with a male BNC connector at one end (connects to the IP video decoder), and an appropriate connector for the video display at the other end.

> **Note:** An additional connector is available on the IP video decoder for HDMI digital output (**HDMI OUT**). The IP video decoder defaults to providing analog video from the **VIDEO OUT** connector; simultaneous analog and HDMI digital output is not possible. For further information on configuring the IP video decoder for use with HDMI displays, see the IONODES "ION-R100 User Manual", available to download from the "Products" area at www.ionodes.com.

> **Note:** DO NOT attempt to power the IP video decoder using the terminals adjacent to the **ETHERNET/PoE** connector. Power MUST be supplied using Power over Ethernet (PoE) — either via a compatible network switch, or with a PoE injector.

Location requirements

Install the IP video decoder in a dry location below decks. The IP video decoder casing is not sealed against water ingress.

For reliable operation, install the IP video decoder in a location where it is possible to maintain an ambient air temperature above 0° C (32° F). In very low temperatures, below 0° C (32° F), the IONODES **ION-R100** IP video decoder may not operate correctly.

Connecting your IP video decoder

The following illustration shows how to connect your IP video decoder to your M100/M200 thermal camera network.

It assumes a standalone network without a router providing links to other network segments or to the Internet. Your network may include additional items, such as a multifunction display (MFD), or other networked marine products.

M100/M200 thermal camera network with IP video decoder
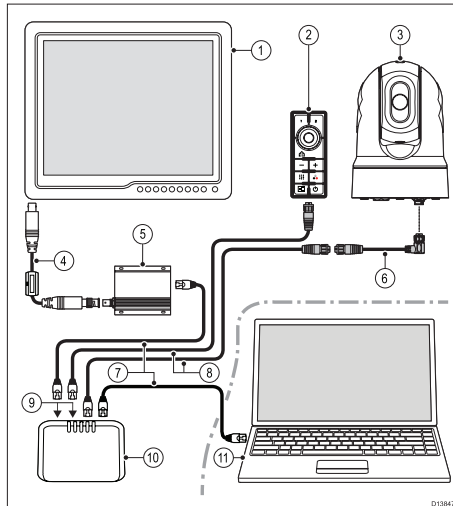
> **Note:** Power connections—other than Power over Ethernet (PoE)—are not shown in this illustration. The M100/M200 thermal camera, analog video monitor, and Ethernet switch each require their own dedicated power connection.

> **Note:** A Windows laptop computer or PC is only needed while configuring the IP video decoder. You can disconnect the laptop computer from the network once configuration is complete.

Item	Description
1	Analog video monitor
2	*JCU-3 remote keypad

Item	Description
3	*M100/M200 thermal camera
4	Coaxial analog video cable, with suppression ferrite fitted (see **Installing the video-cable suppression ferrite**)
5	***ION-R100** IP video decoder
6	RayNet-to-RayNet network cable
7	RJ45-to-RJ45 network cable
8	RayNet-to-RJ45 network cable
9	Power over Ethernet (PoE)-capable network ports
10	Ethernet network switch with PoE capability
11	Windows laptop computer — only needed while configuring the IP video decoder

*Included with M100/M200 system kits.

Installing the video-cable suppression ferrite

To ensure EMC Compliance, you must fit the supplied suppression ferrite to the analog video cable according to the following instructions.

1. Open the clasps of the suppression ferrite.
2. Place the ferrite around the analog video cable, between 50 mm and 100 mm from the connection to the IP video decoder.
3. Clip the ferrite clasps closed, ensuring a tight fit to the cable.

Configuring your IP video decoder

When using the IP video decoder for the first time, you must update the decoder with the network location of the M100/M200 thermal camera.

The following procedure describes how to do this, and also explains how to fix the camera and IP video decoder IP addresses, as appropriate for your network.

1. Ensure that your PC/laptop is connected as illustrated in Connecting your IP video decoder, then check that it is configured to detect Universal Plug and Play (UPnP) devices, such as the M100/M200 thermal camera, and JCU-3 remote keypad.

   To do this in Windows 7, 8, or 10: within Network and Sharing Center > Advanced sharing settings, confirm that the option to Turn on network discovery is selected.

   Note: The IP video decoder is not a UPnP device, so will NOT be listed as a device on your PC/laptop's network.

2. Having connected the other system components as illustrated, power-up the analog video monitor (or MFD), the Ethernet PoE network switch, and then the M100/M200 thermal camera.

   The IP video decoder and JCU-3 remote keypad are supplied with power by the PoE-capable ports on the network switch, or via a PoE injector. (The JCU-3 remote keypad can optionally be powered from a dedicated supply.)

   Once powered up, the M100/M200 thermal camera and JCU-3 remote keypad are automatically added to the list of devices on your PC/laptop. The camera is labelled according to its part number and serial number (for example, "E70353 0025").

   Note: In Windows 7, 8, or 10, network devices are listed under Windows Explorer > Network.

3. Wait for the IP video decoder to start up; this takes approximately three minutes.

   While the IP video decoder is starting, the STATUS light (next to the ETHERNET/PoE connector) flashes to indicate progress:

   • *steady orange* for approximately 90 seconds, then

   • *flashing orange* for approximately 90 seconds, then

   • *steady green*. This indicates that the IP video decoder is running and providing video output, but is not yet receiving IP video input from the camera (*flashing green*).

   Note: The IP video decoder's ETHERNET/PoE connector also has two lights that indicate network activity (flashing yellow light), and provision of power via PoE (steady green light).

   At this stage, your video monitor displays a solid, light-blue screen.

4. Check that the JCU-3 remote keypad's Unicontroller is showing a *steady red* light.

   This indicates that the JCU-3 remote keypad is paired to the camera. If the Unicontroller light is *flashing red*, you need to pair the keypad to the camera. Refer to the documentation supplied with the keypad for information on the pairing procedure.

5. In Windows Explorer > Network, right-click the camera item and select Properties.

   From the Properties dialog that is displayed, make a note of the camera's IP address as shown at the bottom of the dialog.

   Note: IP addresses are numbers in the format *aaa.bbb.ccc.ddd* (for example: **169.254.27.154**).

6. On your laptop or PC, run the IonConfigTool utility.

   The utility searches the network, and lists the details for the ION-R100 IP video decoder. It may take a few seconds for the utility to locate the IP video decoder on your network.

7. Make a note of the IP video decoder's IP address, required in the following step. This is different from the camera's IP address.

   Note: If the utility does NOT list any details for the IP video decoder, check that the Networks list (near the top of the utility window) is showing an IP address followed by the text "(Local Area Connection)". If it isn't, click the list and select the item that includes the text "(Local Area Connection)"; now click the Discovery button to the left of the Networks list.

8. Start the Internet Explorer browser, and type the *IP video decoder* IP address into the address bar.

   The IP video decoder's web interface is displayed.

9. In the Username box, type "admin"; in the Password box, type "admin", then click Log in.

   The System Status page is displayed.

10. In the left-hand menu, click Configuration, then click the Video Out tab.

    The Video Output Selection options are displayed.
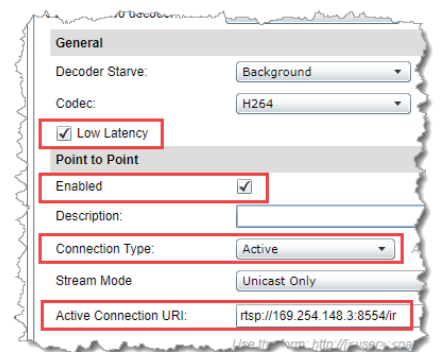
11. In the Decoder Selection section, make the following changes:

    i. In the General subsection, select the Low Latency check box.

    ii. In the Point to Point subsection, select the Enabled check box.

    iii. From the Connection Type list, select Active.

    iv. In the Active Connection URI box, type the following:

        rtsp://**camera-ip-address**:8554/ir

        —replacing **camera-ip-address** with the IP address you noted in step 5.

        For example, if the camera IP address is 169.254.148.3, type "rtsp://169.254.148.3:8554/ir"—without quotes—in the Active Connection URI box.

    Note: The text in the Active Connection URI box is case sensitive. Type the text EXACTLY as shown, using your own camera's IP address.

12. Click Save at the bottom of the page; the IP video decoder attempts to connect to the camera, and locate the video stream. Once the IP video decoder has found the camera's video stream:

    • the Active Connection Status at the bottom of the Video Out tab displays "Connected"

    • the STATUS light on the IP video decoder changes from *steady green* to *flashing green*, indicating that the decoder is processing an IP video stream, and outputting a video signal

    • your analog video monitor displays the video output from the M100/M200 thermal camera. If the camera is in Standby mode, the video output may be mostly black, with some camera icons; press the "Home" button on the JCU-3 remote keypad to wake up the camera, and display a live thermal image.

    Note: If you can't achieve a connection, confirm the case-sensitive Active Connection URI, and the IP address noted in step 5.

13. Click the Network tab.

    The decoder's network details are displayed.

14. If your IP video decoder's IP address (noted in step 7) starts "169.254.", *clear* the Use DHCP check box—this reveals detailed network parameters for the decoder; otherwise, leave the Use DHCP check box *selected*, and **jump to the NOTE at the end of this step**.
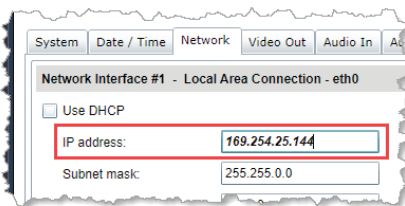
    Confirm that your IP video decoder's IP address starts "169.254.", then, in the IP address box, increase the final number of the address by one. For example, if the current IP address is "169.254.25.**143**", change it to "169.254.25.**144**". However, if the final number of the current IP address is "254", *reduce* it by one, to "253". Then click Save at the bottom of the page.

    A confirmation message is displayed. Make a note of the new IP address that you have assigned to the decoder; you will need this to access the decoder configuration pages in future.

    Note: If your IP video decoder's IP address does NOT start "169.254.", your network contains a DHCP server. This is software that automates network configuration by issuing IP addresses to network devices. The DHCP server may be running on a multifunction display (MFD), or on another network component such as a router. The DHCP server is most likely to assign IP addresses that start "192.168.", "172.16." to "172.31.", or "10.".

15. In the Internet Explorer browser, type the *camera* IP address into the address bar.

    The camera's web interface is displayed.

16. In the User Name box, type "admin"; in the Password box, type "fliradmin", then click Log in.

    The Live Video page is displayed.

17. In the top menu, click Configuration, then in the left-hand menu, click Server > LAN Settings.

    The camera's network options are displayed.

18. In the Interface: eth0 section of the page, from the IP Address Mode list, select Static.

    Note: Keep a record of the address shown in the IP Address box (beneath the IP Address Mode list). You will need this address to access the camera's configuration web pages in future.

19. Scroll to the bottom of the page, and click Save.

    An information dialog is displayed, indicating that the camera's network processes must be restarted.

20. Click Accept to close the information dialog, then click Restart Network.

    A second information dialog is displayed, confirming that the network processes have restarted.

21. Click Accept to close the information dialog, then, in the top menu bar, click Log out.

22. Close Internet Explorer, then close the IonConfigTool utility.

23. Confirm that the IP video decoder and camera are configured correctly by switching off or removing power from all components, then powering up as described in step 2.

    Once the IP video decoder has fully restarted (remember that this takes approximately 3 minutes) the STATUS light on the decoder will *flash green*, and your analog video monitor will display the video feed from the camera.

24. You can now disconnect your PC/laptop from the network switch. The PC/laptop is not required for normal operation of the M100/M200 network.