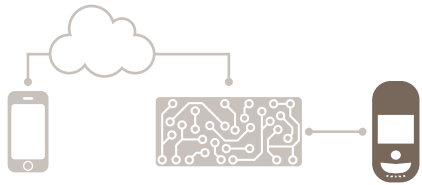




Paradox *Insight*[™]
Designed for your lifestyle

HD77



Installation Guide

Revision 1.1

P ▲ R ▲ D O X[™]

paradox.com

Warranty

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Chapter 1 Introduction

The Paradox Insight™ HD77 camera is a highly reliable HD video (720p in color) and high-quality audio PIR camera that delivers unlimited live HD video and audio streaming to allow users to see and hear events and activities and to protect their homes or businesses anytime, anywhere, directly from a smartphone. In case of a security breach, the HD77 camera provides HD videos with high-quality audio of events for visual verification and reporting. When an alarm is triggered, the HD77 sends a pre-recorded video (360p) in color or black and white (night vision) and 10 images (jpegs) to allow users and the CMS to view what triggered the alarm. The user can also access HD 720p video and audio recordings, as required. The HD77 fully complies with CE, and EN 50131 certification.

1.1 HD77 Key Features

- HD video / audio - with 360p video and live streaming
- Video on Demand (VOD)
- Record on Demand (ROD)
- Record on Motion (ROM)
- Record on Trigger (ROT)
- HD video / audio alarm event verification (jpg still images and H.264 video files)
- Integrated video verification alarm event reporting to the CMS (IPRS-7 / CMSI) and user (email)
- Detection - high reliability PIR, auto pulse, auto dual edge, digital detector with a 110° beam spread
- HD 720p color recordings
- 1.4 mega pixel Image sensor HD video camera equipped with video auto gain control, white balance and auto exposure
- Three second audio / video pre-alarm
- Zero-lux vision using high power IR LEDs
- LAN connection
- Multiple simultaneous multimedia streams
- Event file names and video file names are linked through naming convention for easy identification
- Digiplex bus connection enables easy HD77 system installation/ integration
- Fully compatible with the Paradox EVOHD control panel

1.1.1 Video on Demand (VOD)

The video on demand feature allows up to eight users of the security system (selected as permitted users through the Paradox Insight™ phone application) to have viewing rights. The permitted users then have access to the streaming video from the camera. This access is obtained through the Paradox Insight™ phone application. The master user chooses these permitted users and also sets the permitted user's viewing rights.

1.1.2 Record on Demand (ROD)

The record on demand feature allows permitted users to start and stop camera recording through the Paradox Insight™ phone application. Record on demand records up to 2 minute long video files. Recordings are saved as both 720p and 360p resolution. The 30 first seconds are sent by email to registered App users.

1.1.3 Record on Motion (ROM)

The record on motion feature starts the camera recording when the PIR detector in the HD77 camera detects motion. The recording is started both when the detector is armed or disarmed. The camera records for 10 seconds during ROM. The recorded files are saved in the camera and can be sent to pre-assigned emails.

1.1.4 Record on Trigger (ROT)

The record on trigger feature starts the camera recording when another detector (zone) in the system is triggered. Up to four detectors (zones) can be assigned to each camera. Whenever an assigned detector is triggered the camera starts recording for 10 seconds. The recording can be started both if the detector is armed or disarmed. The recorded files are saved in the camera and can be sent to pre-assigned emails. Up to 4 HD77 cameras can each be assigned up to 4 different zones. Configuring HD77 cameras for ROT is done by the master user through the Paradox Insight™ App.

1.2 Overview

The Paradox Insight™ HD77 camera is a highly reliable HD video (720p in color) and high-quality audio PIR camera.

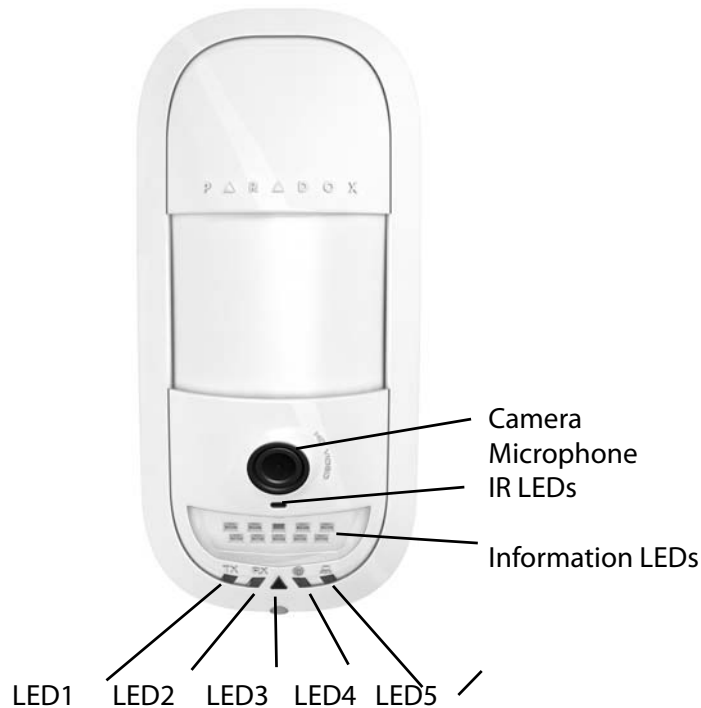


Figure 1 – Front View

1.3 LED Status Indicators

The following table describes the HD77 LEDs and their functionality.

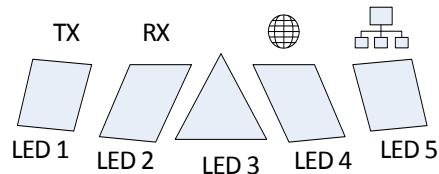


Figure 2 – LED Arrangement

LEDs 1, 2, 4, and 5 are used for installer diagnostics. These LEDs are active when the lock mechanism is opened.

Table 1: LED Assignment

LED	Functionality	LED Display
LED1	Digiplex Data TX	Flashing green = data transmission Off = No data transmission
LED2	Digiplex Data RX	Flashing green = data reception Off = No data reception
LED3 (both with the front cover locked and unlocked)	HD77 module is up and running. There are currently no PIR detections or requests for VOD/ROD.	OFF
	Firmware upgrade in progress	Flashing Purple
	VOD	Blue on
	Power-up	Flashing Blue
	Locate mode (through the keypad only)	Flashing Blue
	General bus failure, wiring problem, or communication problem	Red on
	Bus low power	Flashing Red
	PIR alarm	Red for 3 sec
LED4	Active Web connection	Green
LED5	LAN 10/100Mbps link LAN 10/100Mbps data transfer	Green = LAN active Off = no connection Flashing green = data transfer Flashing red = UPnP failure

Note: LED3 — PIR indication can be set to On or Off by the installer, however, the VOD indication can be turned off only by the master user using the Paradox Insight™ application.

Note: Turning the VOD LED off may be considered in some countries as a violation of applicable laws. Make sure to install the HD77 according to local laws.

Chapter 2 Hardware Installation

Note: The installer should not leave the house without verifying the VOD can be seen through the App!

This section explains the hardware requirements and mounting instructions.

2.1 Requirements

2.1.1 Required Infrastructure

Ensure that the mounting location has the following infrastructure:

- 4-wire combus cable that connects to the EVOHD
- CAT5 or higher cable line that connects to a router or an Ethernet switch
- a router with enough ports to connect all of the cameras (1 port for each camera) plus 1 port if you are using an IP150, 1 port for your computer, and 1 port for the incoming Internet connection

Note: A single CAT5 or higher cable can be used to wire a single HD77 camera. This cable includes 2 twisted pairs for the 4-wire combus and 2 twisted pairs for the Ethernet lines. When using this option the cable length is limited to 50 meters. See *section 2.2.1* on page 12.

Note: An alternate wiring scheme is to wire the HD77 with two separate cables. 1 CAT5 or higher cable for the Ethernet link, and 1– 4-wire cable for the combus. Using this wiring option you can run the CAT5 Ethernet cable up to 70 meters. See *section 2.2.2* on page 12.

Note: If the router does not have enough ports you will also need an Ethernet switch.

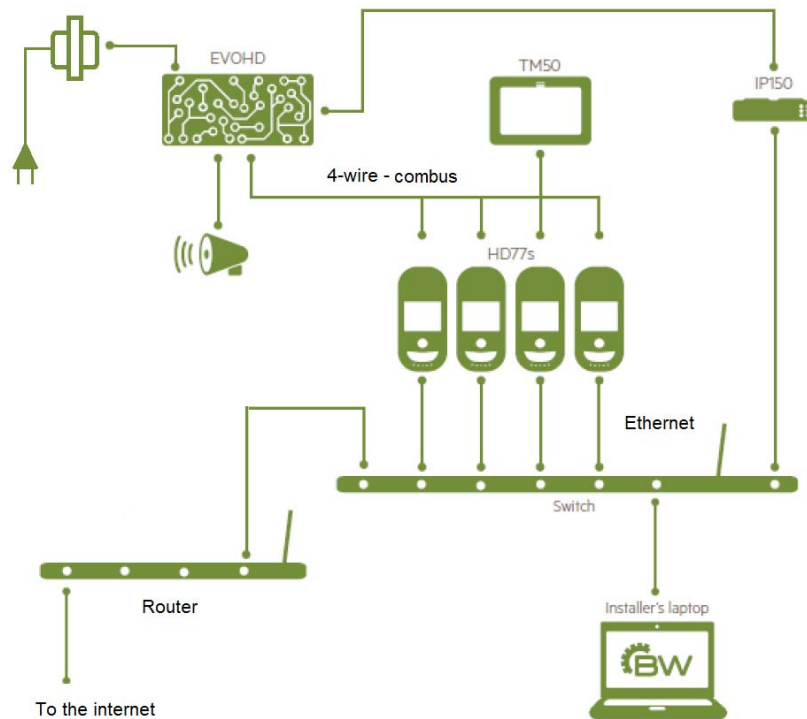


Figure 3 – HD77 Hardware Connections

2.2 Cabling Options

2.2.1 Cabling Option #1

A single CAT5 or higher cable can be used to wire a single HD77 camera. This cable includes 2 twisted pairs for the 4-wire combus and 2 twisted pairs for the Ethernet lines. When using this option the cable length is limited to 50 meters.

The Ethernet cable goes to the router. The 4 – wire combus goes to EVOHD panel.

See option #2 for an alternate wiring scheme to wire the HD77 with two separate cables.

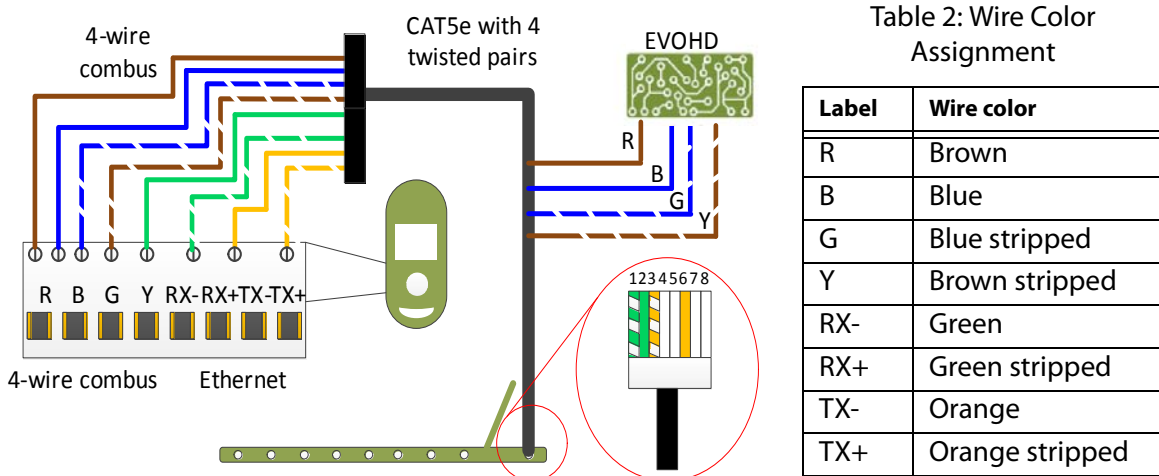


Figure 4 – Recommended Wiring Option#1

2.2.2 Cabling Option #2

This option uses 2 separate cables going to two different locations. One cable to the router and one cable to the EVOHD. One CAT5 or higher cable for the Ethernet link, and one 4-wire cable for the combus. Using this wiring option you can run the CAT5 Ethernet cable up to 70 meters.

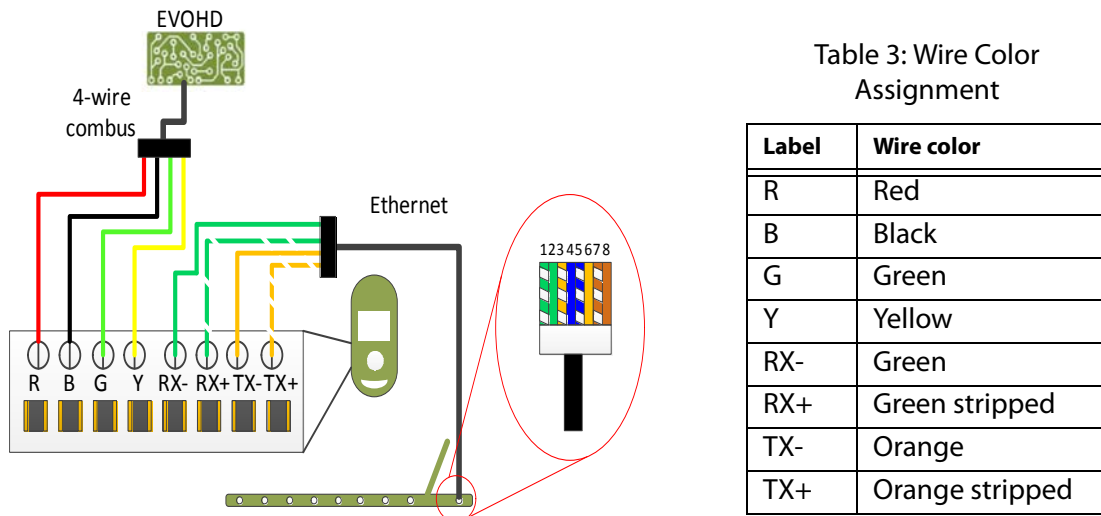
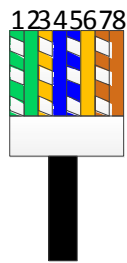


Figure 5 – Recommended Wiring Option#2

2.2.3 Ethernet Cable Wiring

If you will be connecting Ethernet connectors to the cut Ethernet cable wire the connector in compliance with the following table.



Ethernet Wire Locations	Wire color
1	Green striped
2	Green
3	Orange striped
4	Blue
5	Blue striped
6	Orange
7	Brown striped
8	Brown

Figure 6 – Ethernet Cable Wiring

2.3 Location and Mounting

2.3.1 Recommendations

- Install the device at a height between 2.1m to 2.7m (7ft to 9ft), allowing a minimum gap of 2cm (~1 in) from the ceiling (to allow for opening/closing of the cover).

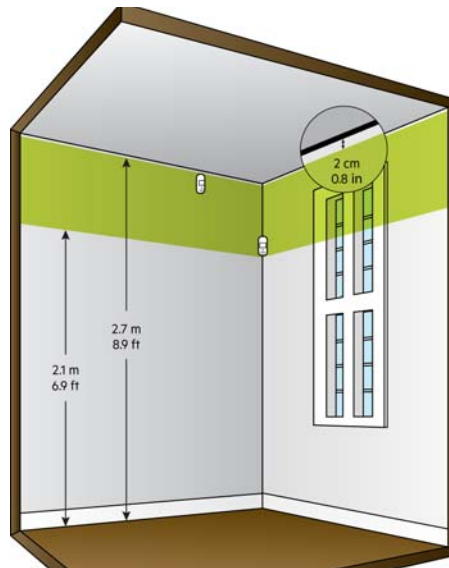


Figure 7 – Mounting Guidelines

- Install the device in a location where the detector and camera's field of view is clear of any obstacles.
- For LAN connection, use a CAT5/CAT5e/CAT6 Ethernet cable (70m max. for option #2, 50m max. for option #1) between the HD77 and the router.

Note: When using a single CAT5 cable (option#1) to also connect the 4-wire combus, the wire run is limited to 50 meters.

- Mount the module so that walking traffic cuts across the beam pattern.

2.3.2 Cautions

- Do not install the device near objects causing temperature changes such as heaters, refrigerators and ovens.
- Do not install the device in the path of air flow from heating and air conditioning vents, fans, or windows.
- Do not install the device in the path of reflective surfaces, direct sunlight or infrared light.
- Do not install the device where it is exposed to oil vapors or steam.

- Do not touch the sensor surface or the camera lens as this could result in a detector malfunction.

2.3.3 Installation Using the Pre-assembled Swivel Bracket

This swivel bracket is capable of:

- sweep angle from left to right of 90 degrees
- angle of declination (down) is 15 degrees.

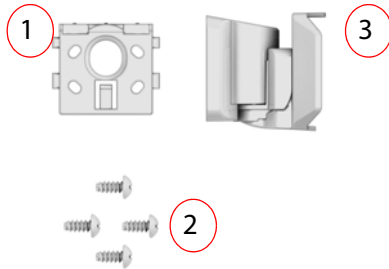


Table 4: Parts List

Part #	Description
1	Wall plate
2	4 self tapping screws #6 B type
3	Pre-assembled swivel bracket

Figure 8 – HD77 Swivel Bracket Parts

1. Unlock the cover of the HD77.

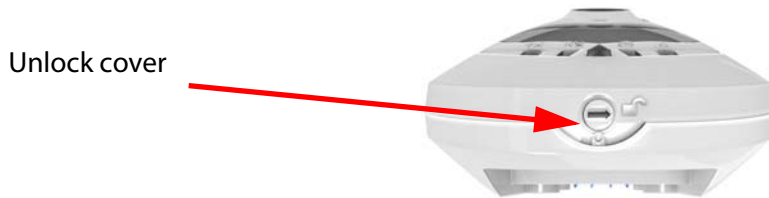


Figure 9 – Separating the Module from the HD77 Housing

2. Separate the front cover with module from the back plate of the HD77. Do this by carefully pulling out the bottom of the front cover and sliding the front cover up. The two parts will separate.
3. Pull the cable(s) through the wall plate (part #1) and screw the wall plate to the wall (screws and anchors are not supplied). The upper screws must be at least 3”(7.62cm) from the ceiling.

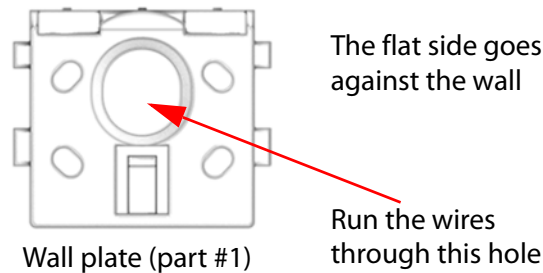


Figure 10 – Install the Wall Plate (part #1)

4. Angle the HD77 swivel mount 15 degrees down to facilitate cable insertion. Pull the cables through the assembled swivel bracket.

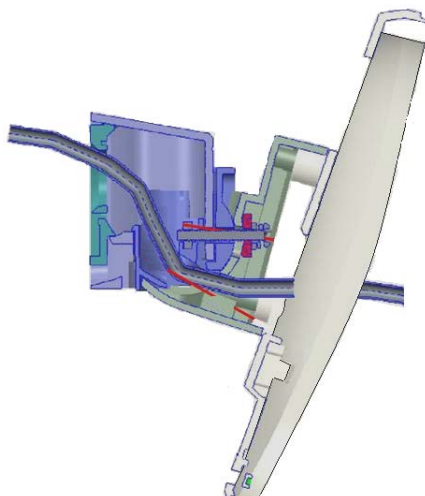


Figure 11 – Run the Cable through the Swivel Assembly

5. Snap the bracket assembly to the wall plate by placing it on top of the wall plate and sliding it down until it locks.



Figure 12 – Connect the Bracket Assembly to the Wall

6. Drill the knockouts for wall installation on the HD77 back plate.

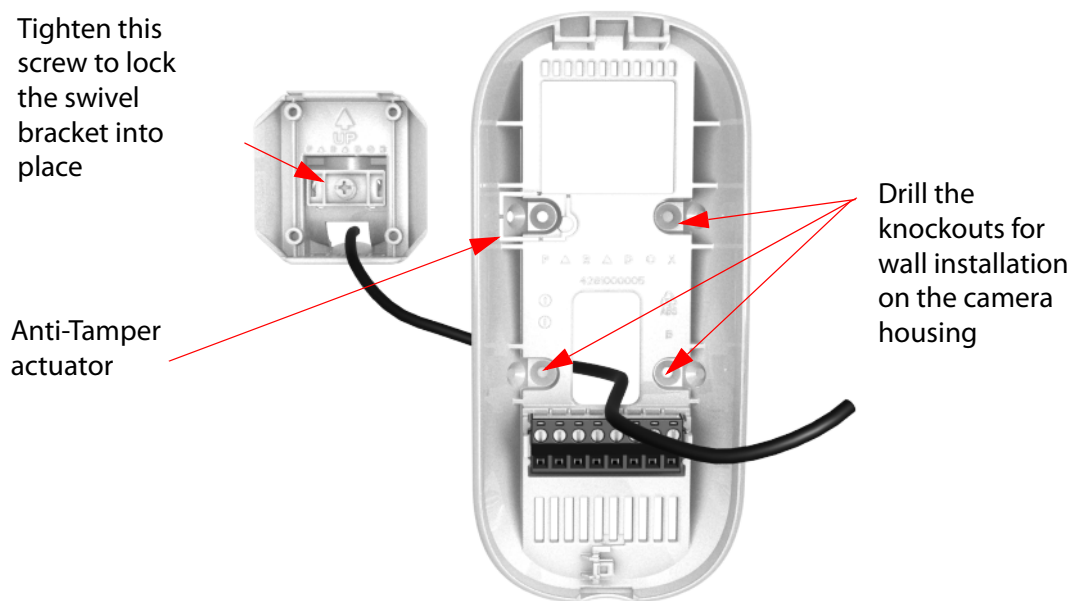


Figure 13 – Screw on HD77 Back Plate to Swivel.

7. Write down the serial number and location of the module. After you finish the hardware installation you can identify each module by serial number in BabyWare and add the location and label to each module.
8. Screw the HD77 back plate to the swivel bracket using the 4 self tapping screws.
9. Adjust the bracket position as desired and tighten the screw to lock it in place (through the opening in the back plate).



Figure 14 – Screw Location to Adjust Camera Angle

10. Connect the combus wires and the Ethernet wires. See *Figure 4* and *Figure 5* for wiring instructions.

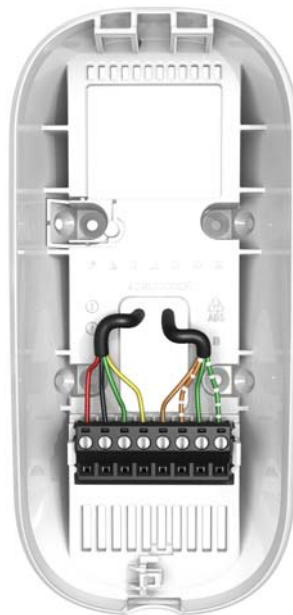


Figure 15 – Wire the HD77

11. Close and lock the HD77 into the camera back plate:
 - Step 1. Install the top of the unit.
 - Step 2. Close the HD77 onto the back plate.

Step 3. Close the lock mechanism at the bottom of the HD77 camera.

Note: By securing the lock, the installer diagnostic LEDs will be turned off.

12. Connect the Ethernet line to the router (if not already connected). Make sure the router is turned on.

13. Adjust the HD77 position.

2.3.4 HD77 Installation without Swivel Bracket (Wall or Corner Mount)

1. Separate the front from the back plate of the HD77:

Step 1. Open the lock mechanism at the bottom of the device.

Step 2. Pry the cover off from the bottom of the unit.

Step 3. Lift the front cover up and away. On the back of this module you will see the serial number.

Step 4. Knock out the appropriate holes on the back plate. Use an awl or an ice pick.

Step 5. Write down the serial number and location of the module. After you finish the hardware installation you can identify each module by serial number in BabyWare and add the location and label to each module.

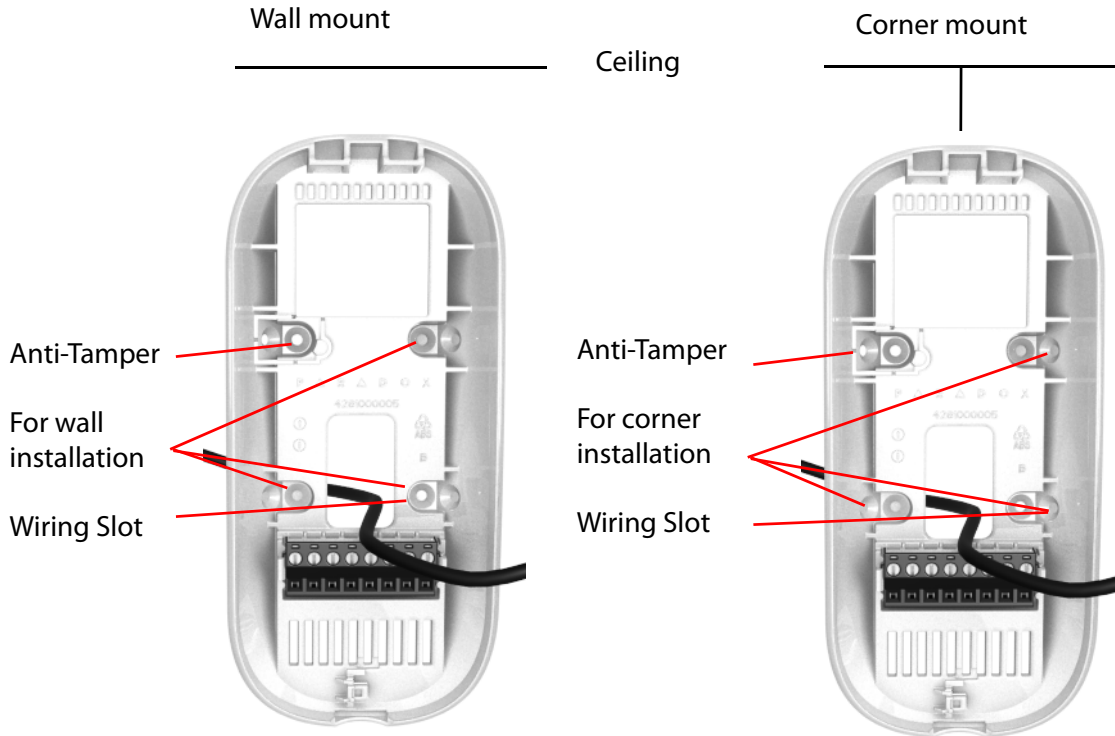


Figure 16 – Knockout Locations

Step 6. Install the device a minimum of 2cm (~1 in) from the ceiling, between 2.1m and 2.7m off the floor.

Step 7. Insert the Ethernet and 4-wire combus cables through the wiring slot of the back plate.

Step 8. Secure the back plate to the wall with screws. (screws and anchors are not supplied).

Step 9. Ensure that the wall tamper knockout is secured to the wall.

Step 10. Connect the combus wires and the Ethernet wires. See *Figure 4* and *Figure 5* for wiring instructions.

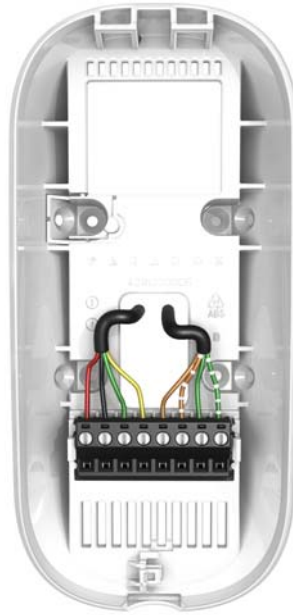


Figure 17 – Wire the HD77

2. Place the front cover onto the back plate:

Step 1. Install the top of the unit.

Step 2. Close the HD77 onto the back plate.

Step 3. Close the lock mechanism at the bottom of the device.

Note: By securing the lock, the installer diagnostic LEDs will be turned off.

Warning: Make sure that the metal cabinet and EVOHD board are connected to a valid ground connection.

3. After the system hardware is connected, power up the system by connecting the power lines from the 16V AC transformer to an outlet.

4. The system will boot-up including the cameras.

The HD77 boot-up is indicated by LED3. The LED flashes blue for up to 3 minutes.

Chapter 3 Creating an Account in BabyWare

3.1 Required Tools

The installer will also need to have the following job specific tools and equipment:

- a laptop with Windows 7
- a connection from your laptop to the system either by:
 - 307USB or
 - IP150 Internet module to connect to the EVOHD serial port plus an Internet connection through your computer

3.2 Required Software

The installer will also need to have the following software available on his laptop.

- BabyWare Installer software V 2.7 or higher (downloadable from www.paradox.com)

Once the system is wired and powered up:

1. Open BabyWare.
2. On the accounts page, open a new account.
3. Enter the requested information.

Note: Click the link below and sign in to the site using your Paradox.com login user name and password to see a video about creating a new account.

<http://www.paradox-insight.com/learning/configuration-createanewaccount>

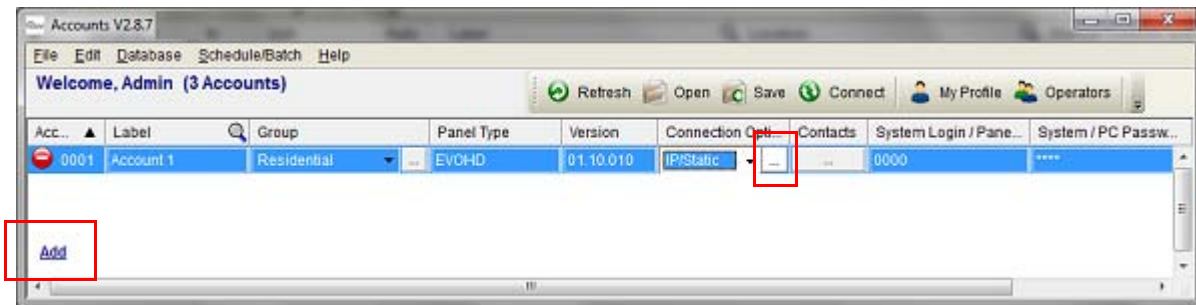


Figure 18 – BabyWare Account Window

4. Open the **Connection Options Settings** window. The following window opens up.

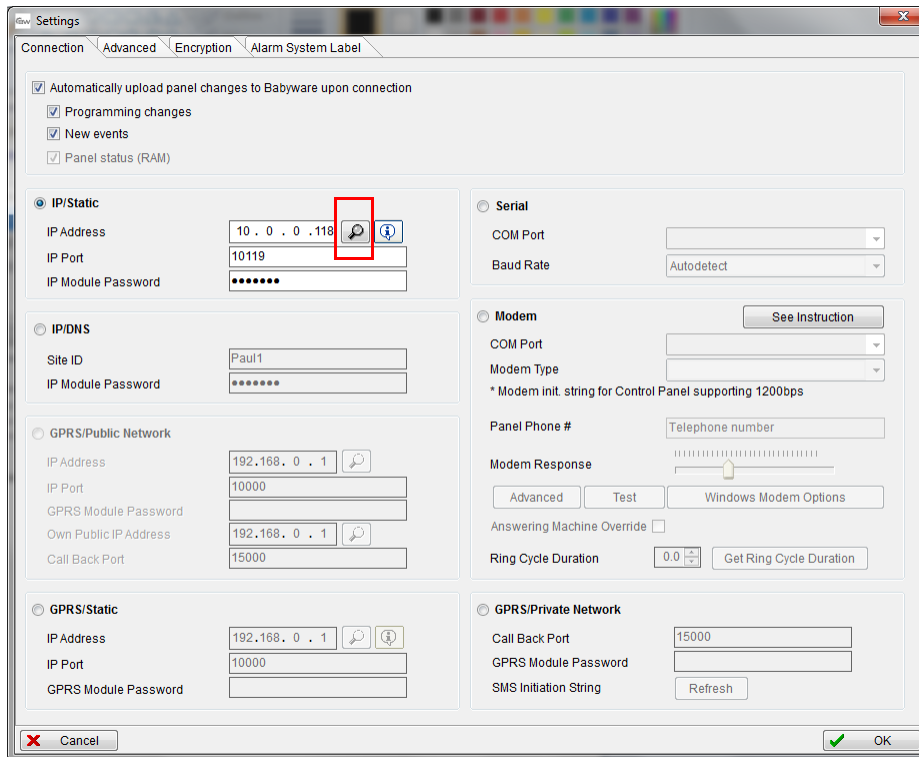



Figure 19 – IP150 Settings Window

5. Click the **Locate**  button. A list of all IP150 devices appears.

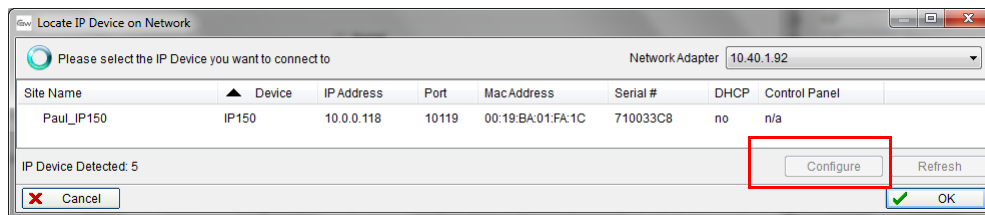


Figure 20 – Locate IP Device on Network

6. Select your IP150 device and Click **Configure**. The IP device configuration window opens.

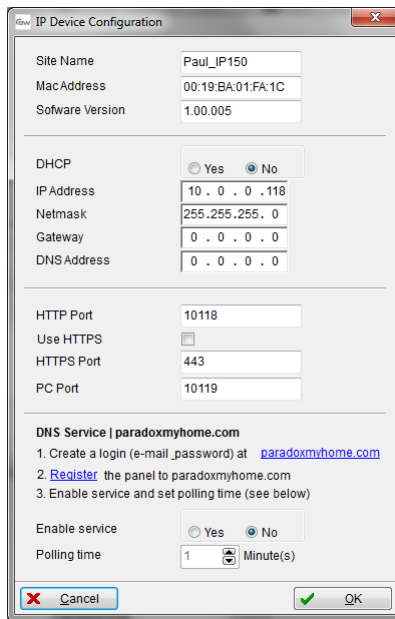


Figure 21 – IP Device Configuration

7. Enter the IP 150 module password.
8. Click **OK** to confirm password.
9. Click **OK** to finish configuring the IP 150 device.
10. Click **Connect** to finalize the connection settings.

Chapter 4 Programming

4.1 Device Location and Label

Server parameters must be programmed through BabyWare only.

PIR parameters of the HD77 can be configured by the installer using the TM50 touchpad, the K641 series keypads and the K656 keypad, and by using BabyWare software.

Note: Due to our constant efforts to improve our products the software screen grabs may not be exactly the same as your screen.

Note: To program the module sections from a Paradox keypad BabyWare must be disconnected from the system.

Note: For each HD77 camera **ALWAYS PERFORM A READ or Receive Programming** to get the current configuration before programming.

4.2 Programming Through BabyWare

With BabyWare open, locate each device by its serial number and add its label (for example front window) and its location (for example Living room).

Serial numbers are acquired through the module scan and automatically inserted by Babyware.

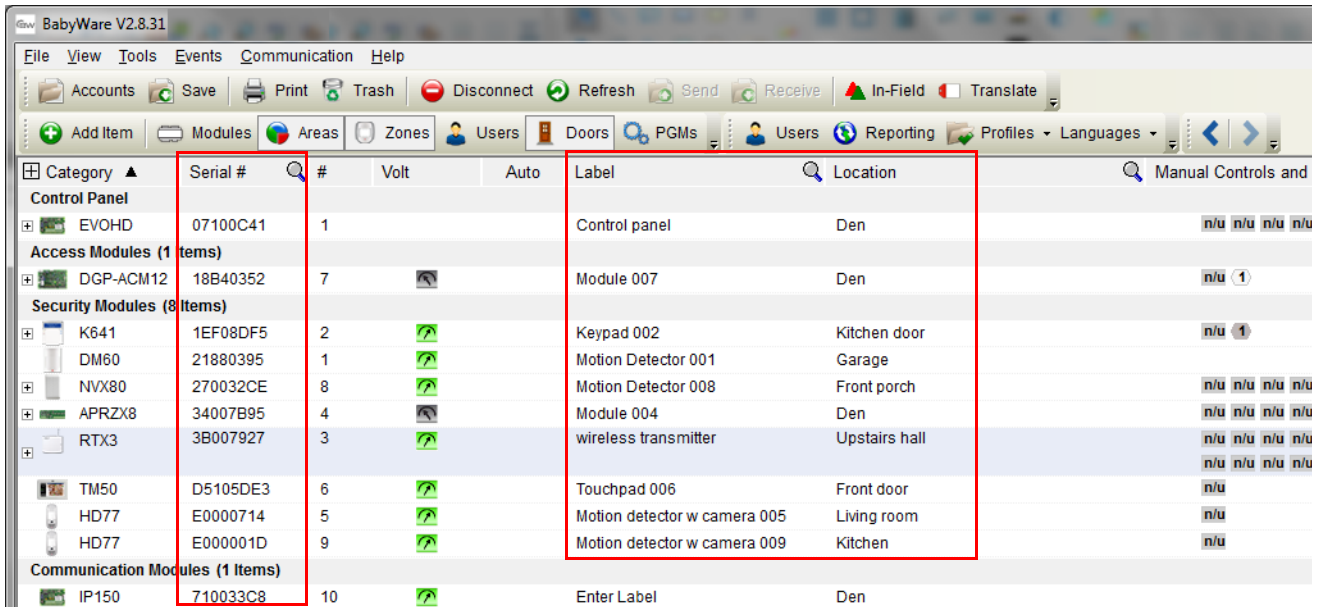


Figure 22 – BabyWare Homepage

4.3 Receive Programming

At the BabyWare homepage always start by going to the HD77 security module, right click and select **Receive Programming**. This assures that you will start with the latest device configuration parameters.

Note: Do this for each HD77 Camera.

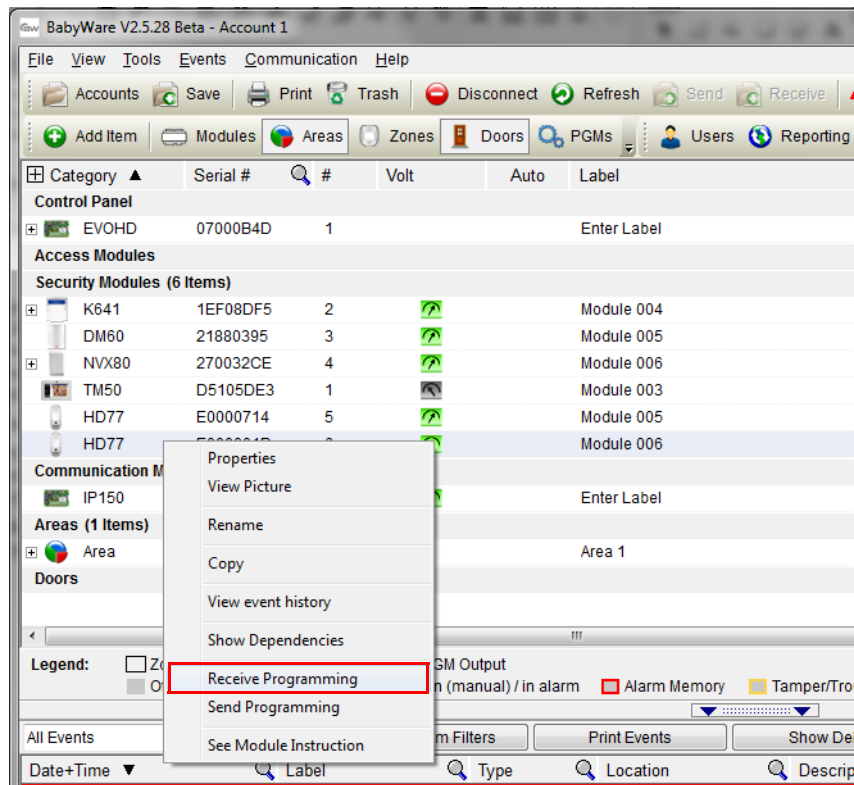


Figure 23 – HD77 Receive Programming

4.4 HD77 Programming

In BabyWare under the **Security Modules** heading, double click or right click the HD77 module and Click **Properties**. The HD77 Programming screen appears. Wait for the properties to appear.

Before you start programming each camera do a **Read** of the existing camera parameters.

Whenever you make a change to the HD77 programming the **Write** button will be enabled and highlighted.



Figure 24 – Write Button

Click **Write** to implement your changes to the device.

4.5 HD77 Server Parameters

1. Enter the **Installer** parameters.
2. Enter the **Central Monitoring Station (CMS)** parameters.

4.5.1 Receiver Parameters (Monitoring Station Reporting)

1. To configure your HD77 to report events to an IPRS7 software, check the **Reporting Enabled** checkbox.
2. Enter the **Receiver** parameters. These parameters come from the Central Monitoring Station.

Step 1. Select **Communication** from the tool bar.

Step 2. Select **Register to IP Receiver**.

Step 3. Click **OK**.

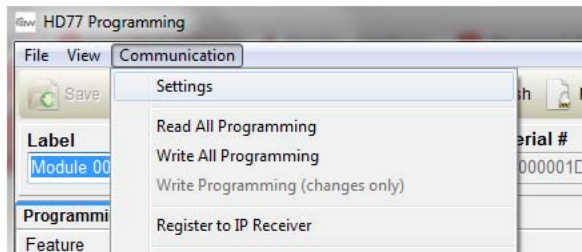


Figure 25 – Communication Drop Down Menu

4.5.2 TCP/IP Parameters

4.5.2.1 Universal Plug 'n Play (UPnP)

This feature automatically sets the port for the IP address. You can turn on the UPnP feature through BabyWare. Your router must support this universal plug 'n play (UPnP) feature. Check with your router manufacturer if this feature is supported.

If you get an error message that the camera was not successfully connected, manually configure your router. If your router does not support UPnP you will need to set up port forwarding on the router. For port-forwarding instructions, please refer to your router manufacturer's instructions.

When supported by your router, we recommend to enable DHCP, enable UPnP, and work with the ParadoxMyHome (PMH) (enable PollPMH, see below). This will allow for easy and fast network installation. When one of the key parameters needs to be fixed, such as working with a static WAN IP (not using PMH) or when UPnP is not supported (or fails) in your router, we **HIGHLY** recommend setting all parameters statically. Meaning, the IP address of the camera should be static (either with static LAN IP or better with using MAC binding which will always assign the same IP address to the camera). The port selection should also be static in order to be able to do port forwarding that will not break in case of port or IP change.

4.5.2.2 Dynamic Configuration WAN

If your ISP assigns a dynamic WAN IP (as in most cases) you must check the **Poll PMH(ParadoxMyHome)** checkbox and make sure the Paradox Insight™ App is configured for a Dynamic IP WAN address. See the Paradox Insight™ App User Manual.

If you do not wish to use the PMH, you must get a static WAN IP from your ISP and uncheck the **Poll PMH (ParadoxMyHome)**.

4.5.2.3 Dynamic Configuration LAN

1. From the HD77 programming page set the HD77 **Server Parameters**, check the **DHCP Enabled** box.
 - If your router supports UPnP check the UPnP (Universal Plug and Play) box. UPnP takes care of the port forwarding automatically.

Note: If your router does not support UPnP, we **HIGHLY** recommend setting all parameters statically.

2. From the HD77 programming page set the HD77 Settings:

Step 1. Select **Communication** from the tool bar.

Step 2. Select **Settings** from the drop down menu. The settings page opens.

Note: For your router settings please contact your Internet Service Provider (ISP).

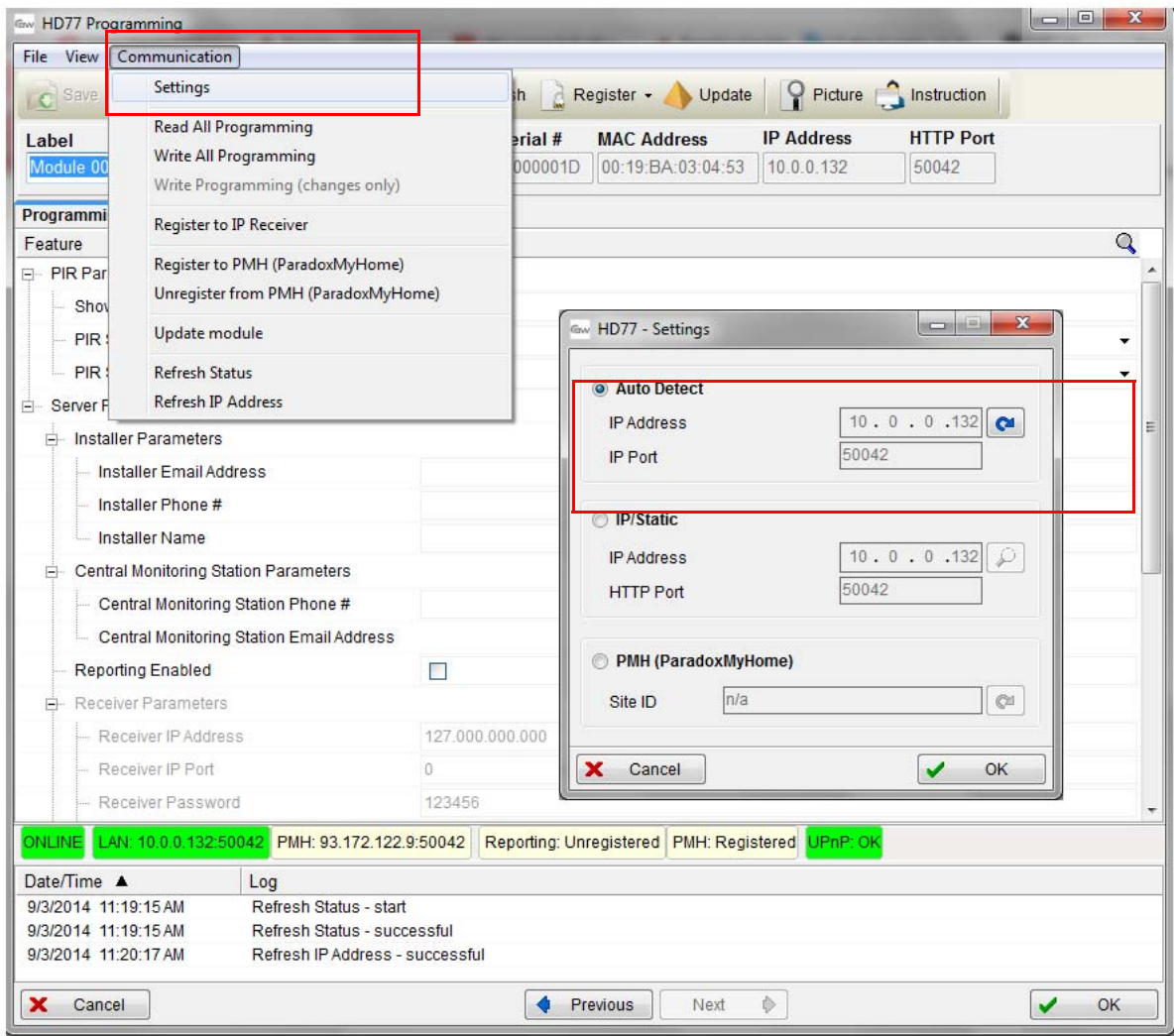


Figure 26 – HD77 — Settings

Step 3. On the HD77 Settings window select **Auto Detect**.

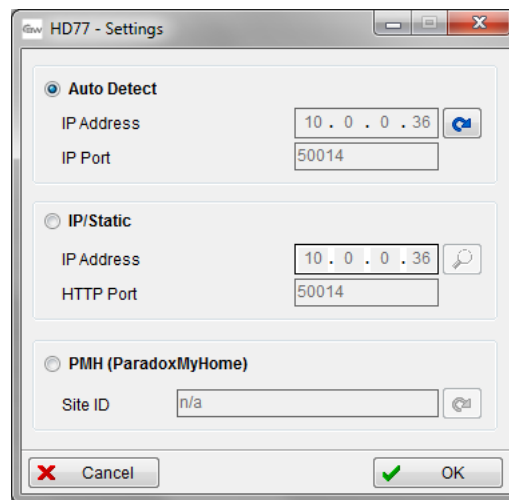


Figure 27 – HD77 Settings Window

Step 4. Click Refresh .

Step 5. Click **OK**, and return to the HD77 programming page.

3. From the HD77 programming page register the HD77 to **PMH**:

Step 1. Select **Communication** from the tool bar.

Step 2. Select **Register to PMH (ParadoxMyHome)**.

Step 3. Enter your Installer credentials.

Step 4. Enter a unique Site ID, to identify the system on ParadoxMyHome. This site ID is needed for the Paradox Insight App.

Step 5. Click **OK** to finish the successful registration.

Step 6. Click **OK** and return to the BabyWare homepage.

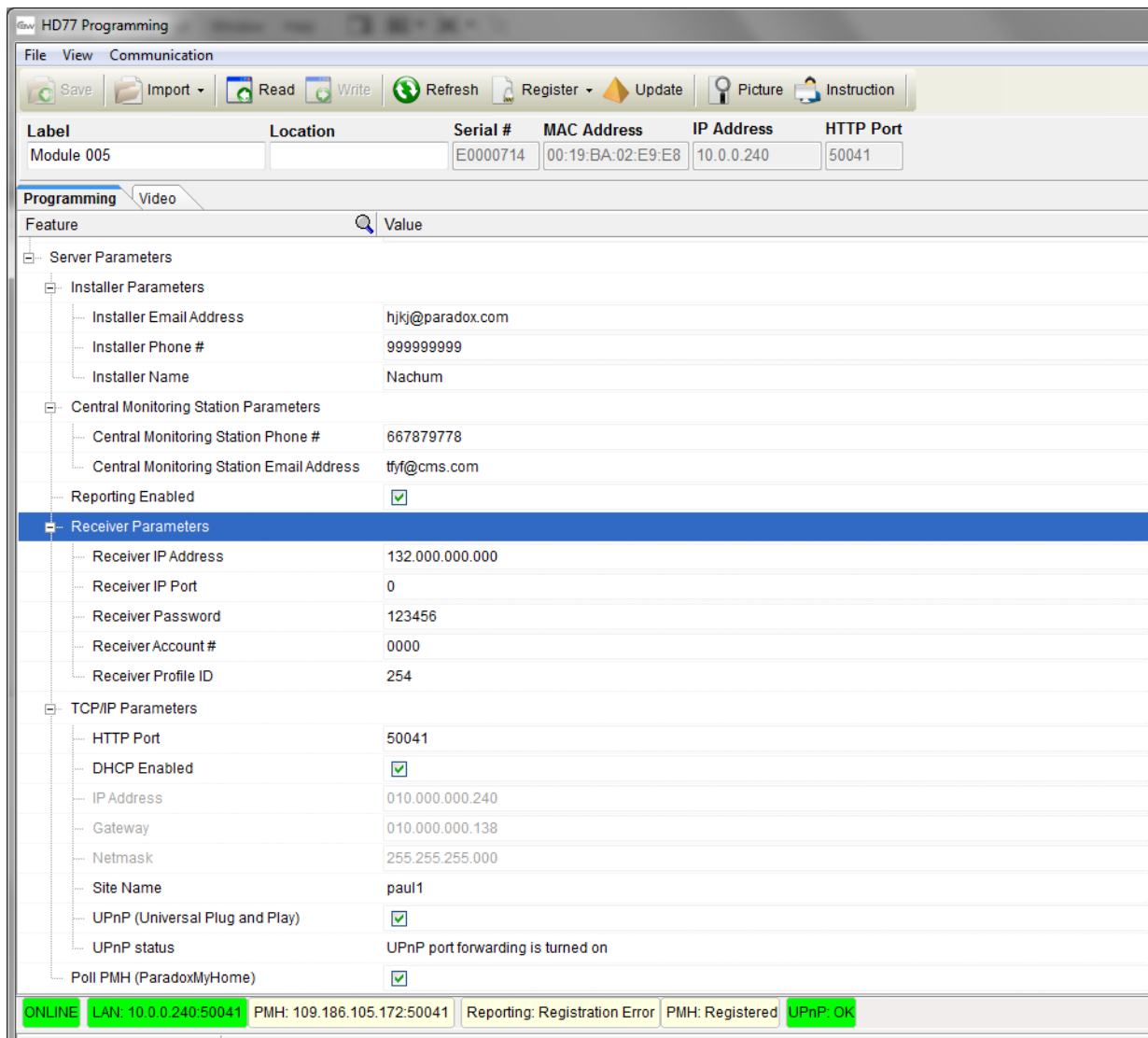


Figure 28 – Server Parameters

Note: If your router supports UPnP you are now DONE configuring Server Parameters.

4.6 Static IP for the WAN

If your ISP assigns a dynamic WAN IP (as in most cases) you must check the **Poll PMH(ParadoxMyHome)** checkbox.

If you do not wish to use the PMH, you must get a static WAN IP from your ISP and uncheck the **Poll PMH (ParadoxMyHome)**. Later, you will have to manually key-in this IP address into the Paradox Insight™ Application and the BabyWare application HD77 programming page.

When your ISP gives you a Static IP address for the WAN you must enter this IP address as your static IP. See the Paradox™ Insight Application User manual for instructions to set a static IP for the WAN.

4.7 Reserved/Static IP Configuration for the LAN

Note: If your router supports reserved IP addresses, bind the MAC address to a reserved IP address for the LAN.

Note: If you are using a reserved IP address, the camera must be DHCP enabled. The reserved IP address must be within the DHCP range.

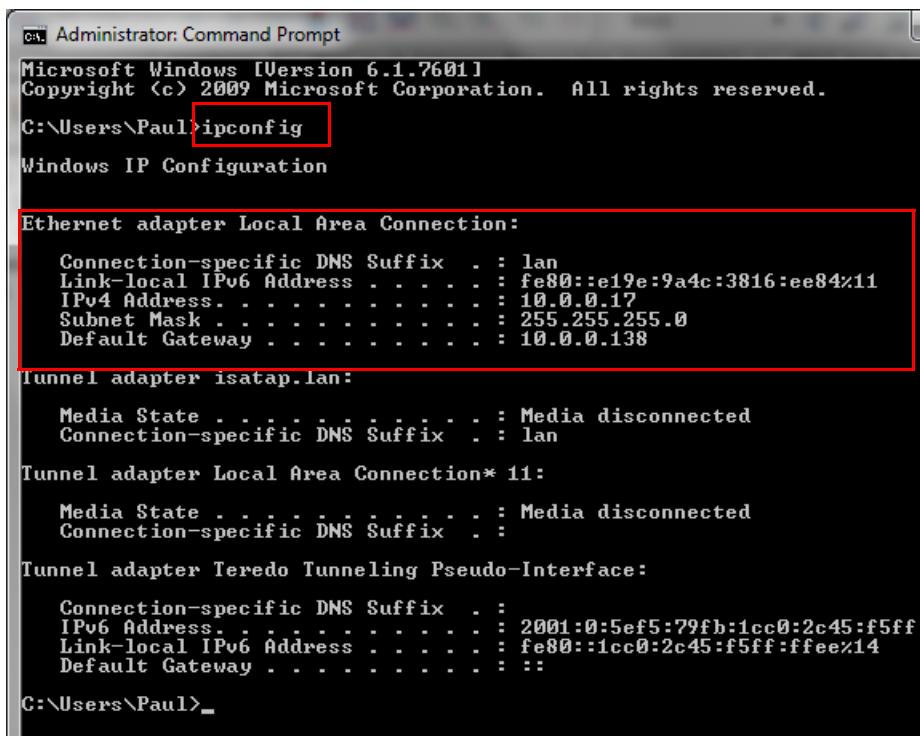
Note: If you are using a static IP address the camera must be DHCP disabled. The static IP address must be outside of the DHCP range.

Get the router IP address:

1. Open a command prompt window. Press the windows button on your keyboard. In the search programs and files window type in Command.
2. Select Command Prompt.
3. At the prompt Type **ipconfig**
4. Press Enter.

Type in this command

IP Address
Subnet Mask
Default Gateway (router IP address)



```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Users\Paul>ipconfig
Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : lan
    Link-local IPv6 Address . . . . . : fe80::e19e:9a4c:3816:ee84%11
    IPv4 Address. . . . . : 10.0.0.17
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.0.0.138

Tunnel adapter isatap.lan:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : lan

Tunnel adapter Local Area Connection* 11:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Tunnel adapter Teredo Tunneling Pseudo-Interface:

    Connection-specific DNS Suffix  . :
    IPv6 Address. . . . . : 2001:0:5ef5:79fb:1cc0:2c45:f5ff:
    Link-local IPv6 Address . . . . . : fe80::1cc0:2c45:f5ff:ffe%14
    Default Gateway . . . . . : ::

C:\Users\Paul>
```

Figure 29 – Command Prompt ipconfig

5. Write down the IPv4 Address, Subnet mask and Default Gateway.

6. Access your router's configuration page:
 - Refer to your router's manual for the exact procedure. In most cases, this is done by entering the router's IP address in the address bar of your web browser.
 - For this instruction sheet, we will use 192.168.1.1 as an example, since it is a commonly used default router IP address.
 - Your router's IP address may be indicated in the router's instructions or on a sticker on the router.
7. In the **router's configuration** page, check the DHCP settings:
 - If DHCP is enabled, verify that the IP address range leaves at least one IP address available outside of the range.
 - The range shown in following figure, would leave addresses two to four and 101 to 254 available (all the numbers in an IP address are between 1 and 254.).

Use Router as DHCP Server
 Starting IP Address 192 . 168 . 1 . 5
 Ending IP Address 192 . 168 . 1 . 100

Figure 30 – DHCP Settings

- Record one of the addresses outside the DHCP range as the one you will use for the HD77.
 - DHCP must be enabled.
8. In the router's configuration page, go to the Port Forwarding section (also known as "Port Mapping" or "Port Redirection"):
 - Step 1. Add a service/item, set the Port to >50000, for example 10001, and enter the IP address selected in the previous step 7 or the HD77 module.
 - Step 2. If port 10001 is already used, you can use another one, such as 10002 or 10003.
 - Step 3. Update the camera port parameter in BabyWare.
 - Step 4. If you have trouble connecting to the camera, verify with the ISP that these ports are available and working.

Note: Each camera needs a unique port number. DO NOT use the same port number more than once.

Port Forwarding (screenshot may differ depending on type of router used).

Service Name Internet Module
 Service Type TCP/UDP
 Starting Port 80 (1~65534)
 Ending Port 80 (1~65534)
 Server IP Address 192 . 168 . 1 . 101

Figure 31 – Port Numbering

9. Open BabyWare.
10. Go to HD77 — Settings. See (see *Figure 32*).

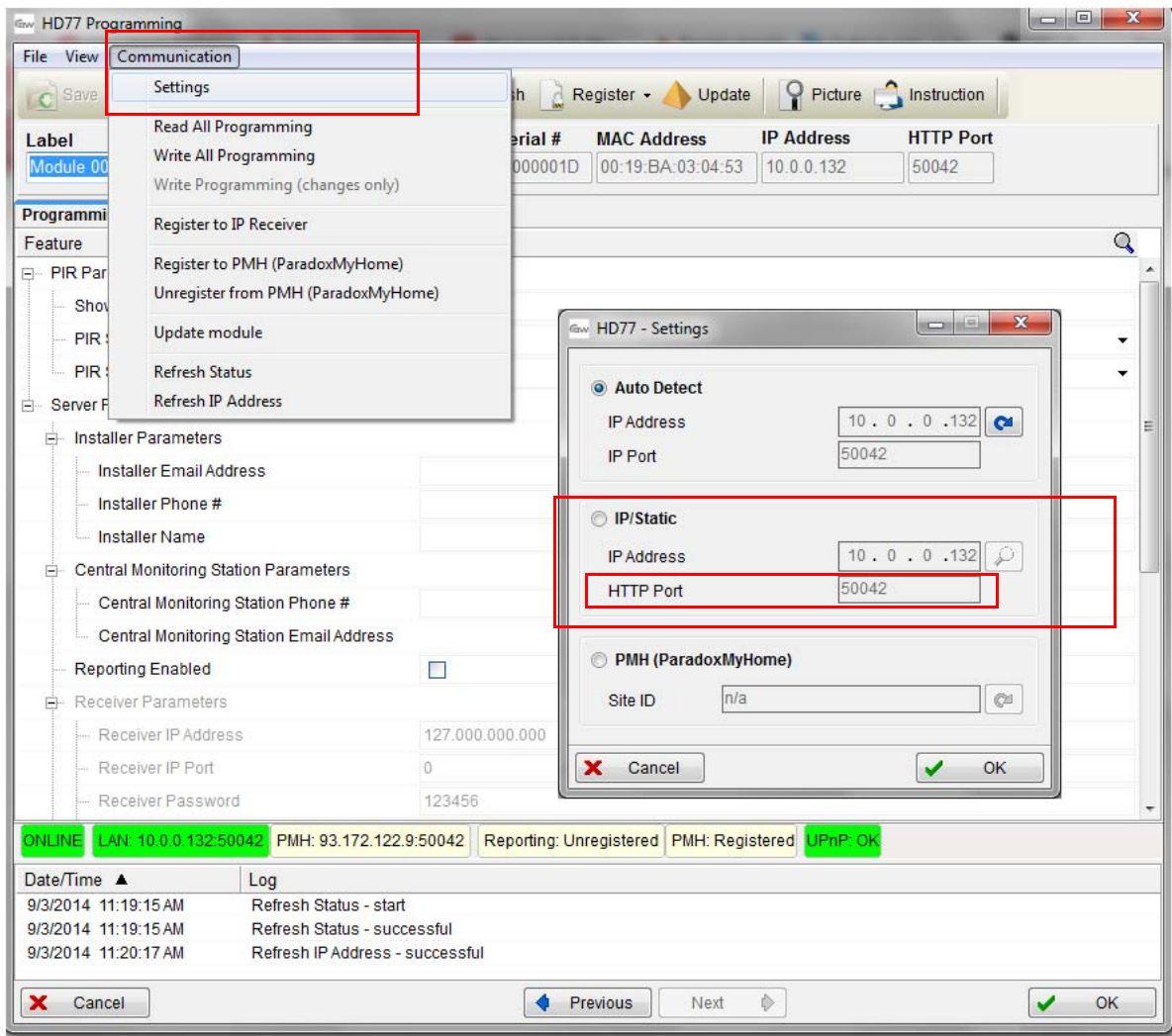


Figure 32 – HD77 — Settings Update Graphic

11. On the HD77 Settings window select **IP/Static**.

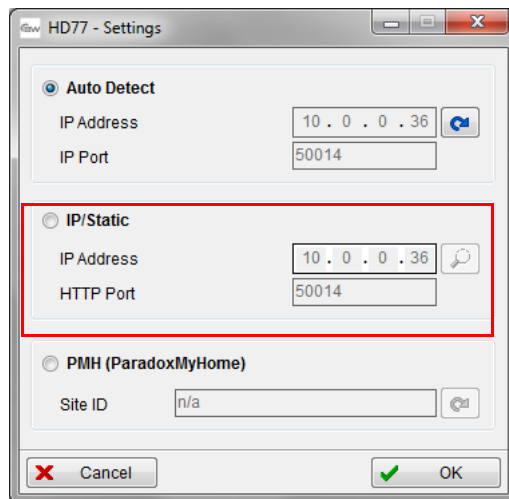



Figure 33 – HD77 Settings Window Update Graphic

12. Click **Locate**  .

13. Select the located static IP address that matches the Default Gateway.
14. Confirm that the Port # matches the port number assigned in the router port forwarding.
15. Ensure that the router is connected properly as indicated in the router's instructions.

Set the HD77 camera to IP/Static configuration

1. Un-check the DHCP Enabled checkbox on the HD77 programming page of BabyWare.
2. On the HD77 programming page Select **Communications**.
3. Select **Settings**. The settings page opens.
4. On the HD77 Settings window select **IP/Static**.

5. Click Locate  . The following window opens up.

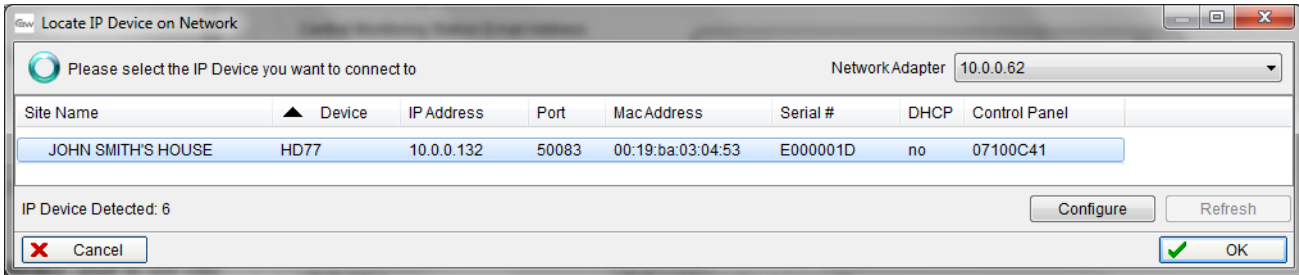


Figure 34 – Locates Devices Window

6. Write down the IP Address, Port, MAC address and Serial number.
7. Click **Configure**. After a few seconds the IP Device Configuration window opens.

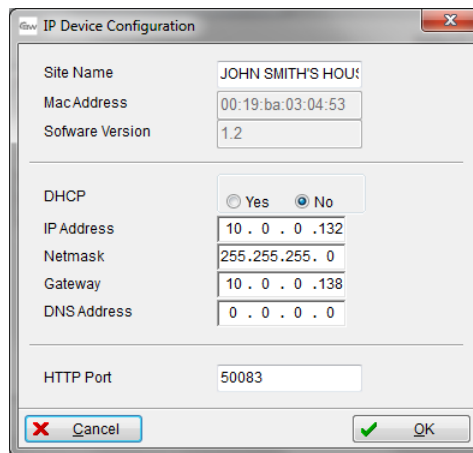


Figure 35 – IP Device Configuration Window

8. Make sure DHCP is off select the No button.
9. Click **OK**.
10. Enter the password. Default password is "paradox".
11. Click **OK** on each window until you return to the HD77 programming page.
12. In your router administration page:

- Step 1. Type the Default Gateway IP address from the command prompt window into your browser.
- Step 2. You will be asked for a user name and password. Get these from your ISP.
- Step 3. Bind (Reserve) the Mac address to its IP address for each HD77.
- Step 4. Assign the port number from the Locate Devices window to forward the IP address port to the HD77 camera.

13. Register your camera to ParadoxMyHome.

HD77 Programming page => Communication => Register to PMH.

Your HD77 camera server settings should now be configured for a static IP for the LAN.

Note: The installer should not leave the house without verifying the VOD can be seen through the App!

Chapter 5 PIR Parameters Programming

PIR parameters of the HD77 can be configured by the installer using the TM50 touchpad, the K641 series keypads and the K656 keypad, and by using BabyWare software.

Note: To program the module sections from a Paradox keypad BabyWare must be disconnected from the system.

Note: Due to our constant efforts to improve our products the software screen grabs may not be exactly the same as your screen.

1. Select the configuration parameters.

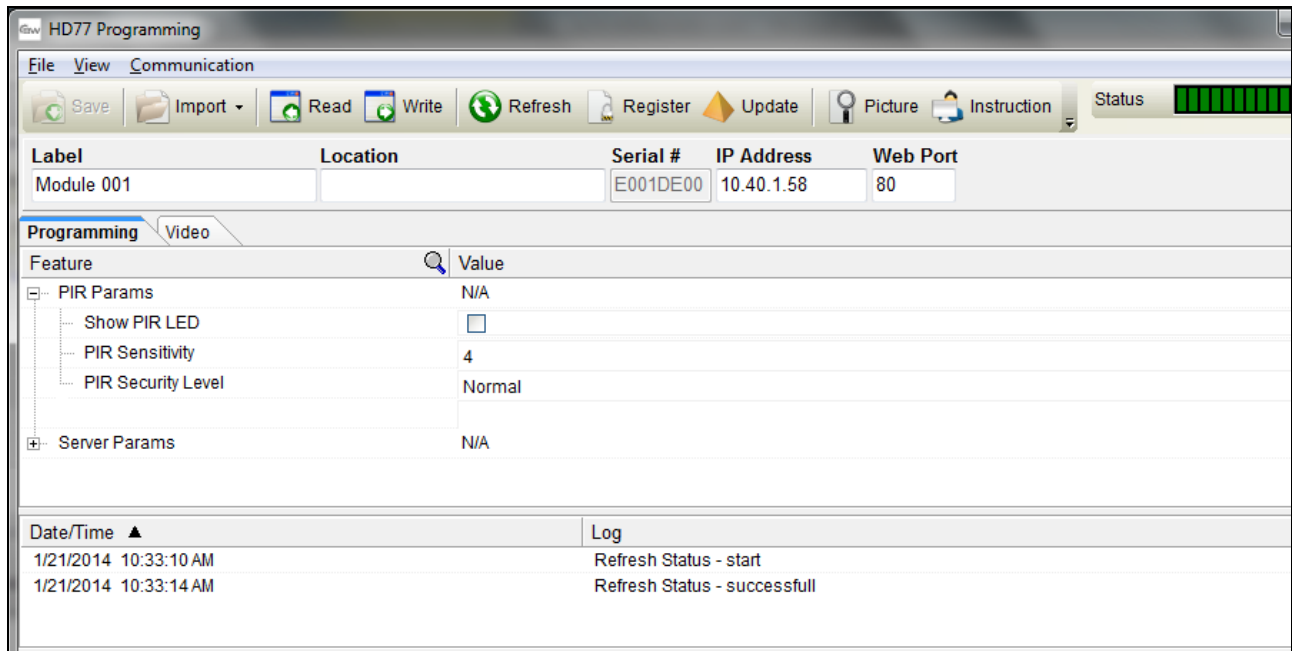


Figure 36 – PIR Parameters

Step 1. Show PIR LED – Default is on

Check this box to activate LED#3 to display (LED#3 lights up red) when PIR motion is detected.

When this box is not checked LED#3 stays off when PIR motion is detected.

Step 2. Set PIR sensitivity Level.

PIR Sensitivity Level – Default is #2.

Sensitivity level 0 is low sensitivity, useful for a room with large windows to reduce false alarms caused by environmental circumstances.

Sensitivity level 4 is high sensitivity, useful for a room with small windows due to the reduced risk of false alarms caused by environmental circumstances.

Note: These are only two of many conditions to select the proper sensitivity for the camera.

Step 3. Set Security Level

PIR Security Level – Default is Normal.

Security level “Normal” is for rooms with curtains, regular sized windows and little direct sunlight entering the room.

Security level "High" is useful for a room with large windows, light curtains that may move when the window is open, or a room with windows on the sunny side of the house.

2. Use VOD to verify camera vision / image / angle.
In BabyWare => HD77 Properties => Video tab => play button

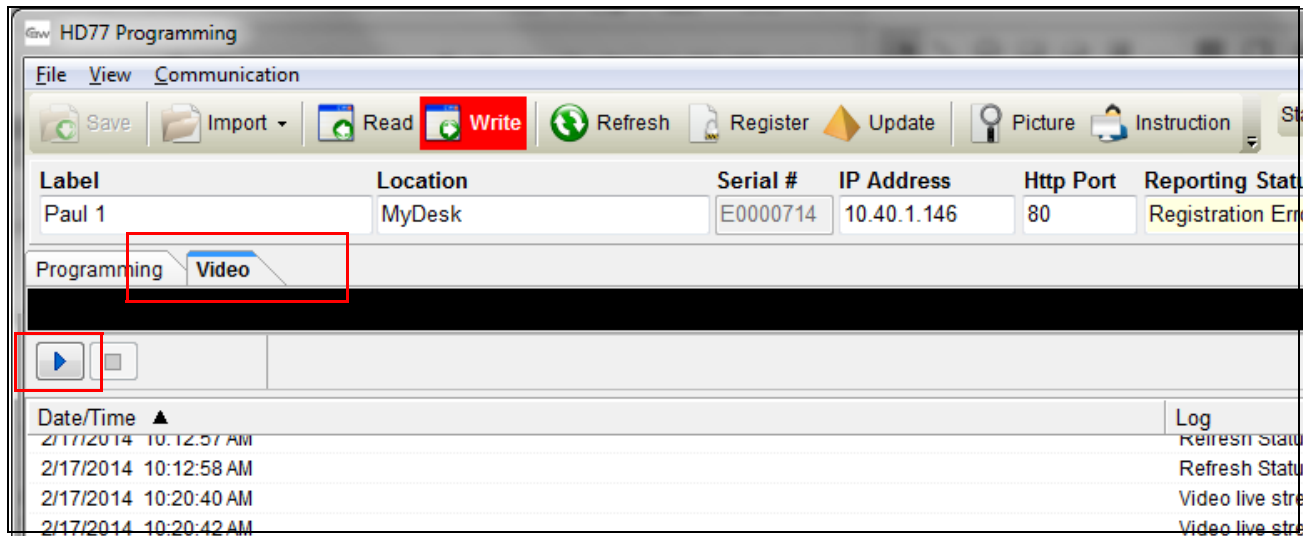


Figure 37 – HD77 Video Stream in BabyWare

When installed with a swivel bracket, you can adjust the HD77 position by doing the following.

- Step 1. Remove the front cover with camera.
- Step 2. Loosen the screw. See *Figure 14*.
- Step 3. Make your adjustments.
- Step 4. Re-tighten the screw.
- Step 5. Replace the front cover.

3. Perform a walk test to verify that everything is working properly.

5.1 Programming Through the TM50 Touchpad

Note: To program the HD77 from any installed keypad, BabyWare must be disconnected from the system.

Note: Only PIR parameters for the HD77 can be configured through the touchpad.

Note: A module reset done via the keypad will RESET ALL Parameters, **INCLUDING SERVER PARAMETERS**.

The following flow chart shows the programming process through TM50 Touched pad.

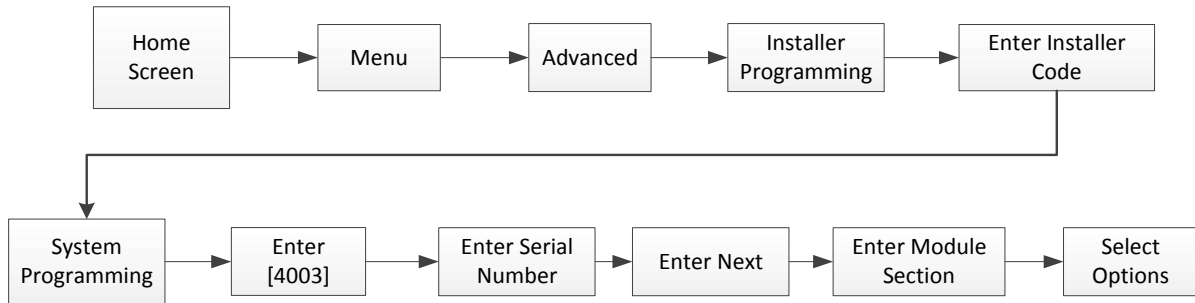


Figure 38 – Flow Through the TM50 Touchscreen

1. Select the **[Menu]** key.



Figure 39 – Main Screen

2. Select the **[Advanced]** key.

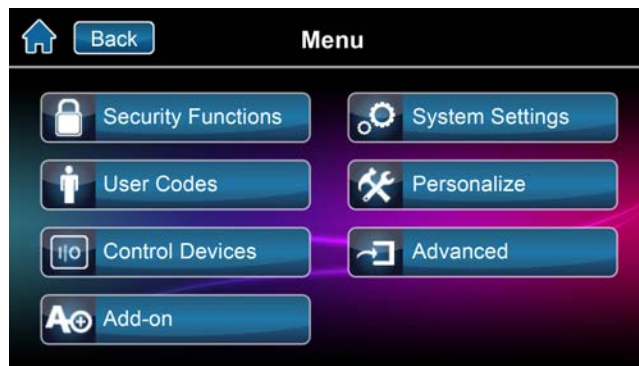


Figure 40 – Menu Selections Screen

3. Select the **[Installer Programming]** key.



Figure 41 – Advanced Screen

4. Enter your **[Installer Code]**. Default is 000000



Figure 42 – Installer Code

5. Select the **[System Programming]** key.



Figure 43 – Installer Programming Screen

6. Key in Section **[4003]**.



Figure 44 – Installer Programming Screen

7. Enter the module's [Serial Number]. Click **Next**.

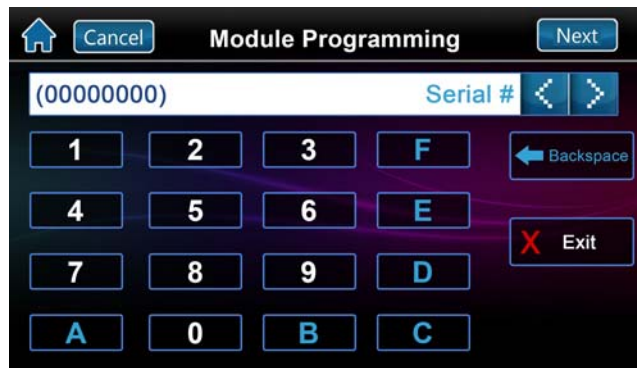


Figure 45 – Module Serial Number Screen

8. Enter Section [001].

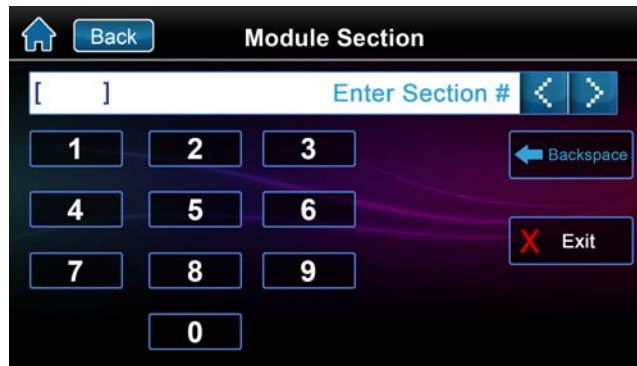


Figure 46 – Programming Section

9. Option 1 is for PIR LED On/Off; Default is On.
On [1] – LED#3 lights up red when PIR motion is detected.
Off [*] – LED#3 stays off when the PIR motion is detected.
Options 2 through 8 are to remain off.

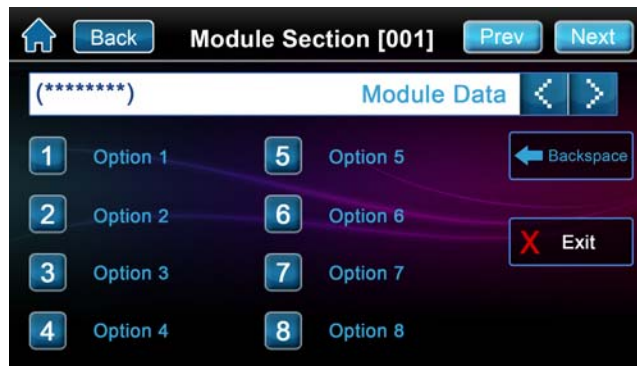


Figure 47 – Options Selection Screen

10. Enter Section [002].
11. Select PIR sensitivity level, level 0 to level 4; Default is #2.
12. Enter Section [003].
13. Select PIR security level, level 0 to level 2; Default is #0.

5.2 Programming Through the K641 series Keypads and K656 Keypad

Note: To program the HD77 from any installed keypad, BabyWare must be disconnected from the system.

Note: Only PIR parameters for the HD77 can be configured through the keypad.

Note: A module reset done via the keypad will RESET ALL Parameters, **INCLUDING SERVER PARAMETERS.**

1. Press and hold the [0] key. You will be asked to input your installer code.
2. Enter [Installer Code]. The default installer code is 000000.
3. Key in Section [4003].
4. Enter the module's [Serial Number].
5. Enter Section [001].
Option 1 is for PIR LED On/Off; Default is On
On – LED#3 is red when PIR motion is detected.
Off – LED#3 stays off when the PIR motion is detected.
Options 2 through 8 are to remain off.
6. Enter Section [002].
7. Select PIR sensitivity level, level 0 to level 4; Default is level 2.
8. Enter Section [003].
9. Select PIR security level, level 0 to level 2; Default is level 0.

PIR Settings

Description	Section	Setting	Setting Details	Example
1. PIR LED display	[001]	[*] Off [1] On	PIR LED Off PIR LED On Default	(1*****)
2. PIR Sensitivity	[002]	[0]	Low (Sensitivity level)	(002) 000-002 as seen on the TM50
		[1]		
		[2]	Default	(002) as seen on the K641 series keypads
		[3]		
		[4]	High (Sensitivity level)	
3 Security Level	[003]	[0] Normal	(Mild environment) Default	(003) 000-000 as seen on the TM50
		[1]	Medium	
		[2]	High (Harsh environment)	(000) as seen on the K641 series keypads

Chapter 6 ParadoxMyHome (PMH)

ParadoxMyHome is a Paradox Domain Name System (DNS) service that enables the installer to remotely access a Paradox Reporting Device (e.g. IP150 or HD77). A dynamic IP address is assigned automatically, and can change on a regular basis. ParadoxMyHome keeps track of these changes and associates the current IP address to the Site ID (e.g. John's house).

As an installer make sure you have a ParadoxMyHome account.

6.1 To Open a ParadoxMyHome Account

1. Using any browser go to www.ParadoxMyHome.com.
2. Click **Create Login**, and follow the directions.

6.2 Registering/Unregistering your devices to ParadoxMyHome

Once you have a valid ParadoxMyHome account you can proceed to register your customer's accounts.

To register the HD77 cameras with ParadoxMyHome:

1. Open BabyWare.
2. Double click on any connected HD77 module listed in BabyWare.

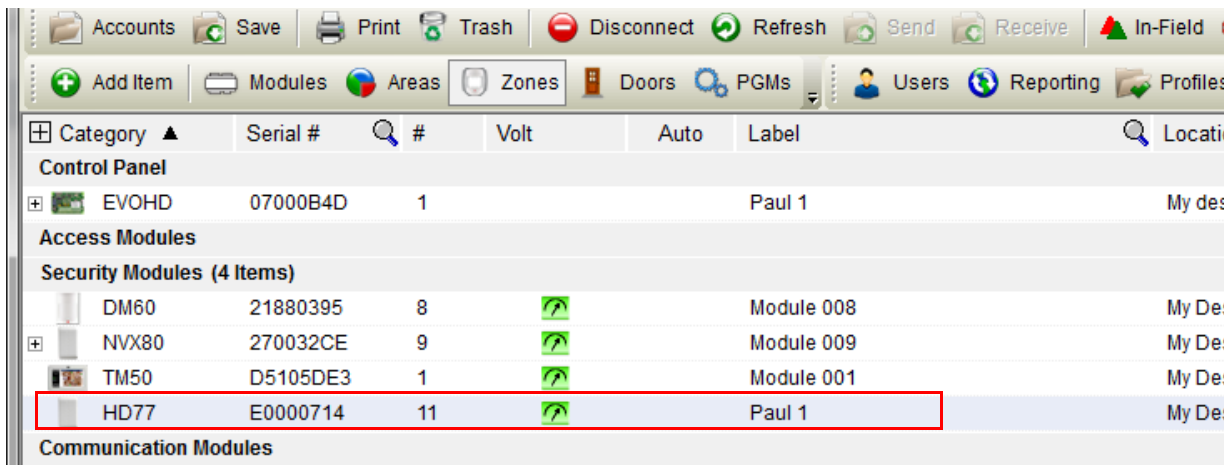


Figure 48 – Select an HD77 to Register

3. On the HD77 programming page click **Communication**.

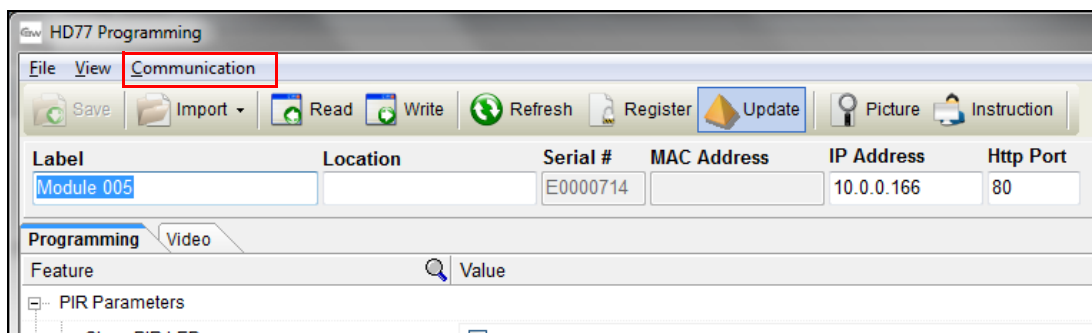


Figure 49 – Registration to PMH

4. In the drop down menu select **Register to PMH (ParadoxMyHome)**.

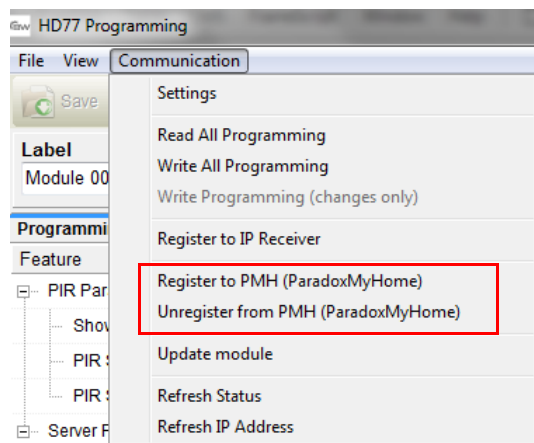


Figure 50 – Register/Unregister to PMH

Note: To unregister follow the same procedure but select **Unregister from PMH** at the drop down menu.

5. Enter the requested information. The SiteID should be unique for the site (up to 4 HD77 cameras).



Installer e-mail address and password from his ParadoxMyHome site

This Site ID is to be given to the end user. He will need it for the Paradox Insight™ application.

Figure 51 – ParadoxMyHome Registration Page

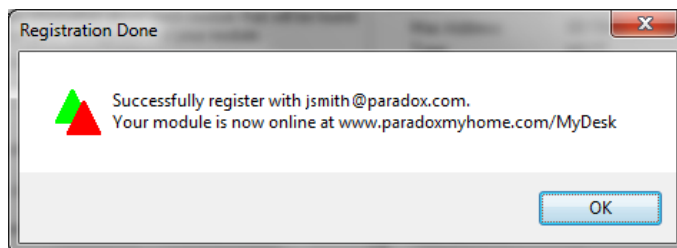


Figure 52 – Registration Successful

6. Verify HD77 updated PMH with status, public IP, and ports by opening your PMH account and checking the site.

6.3 Deleting a Site from PMH

When deleting a site from my PMH you may get an error message that the site still exists. If you delete a site from PMH on the registered devices page you then have to go to the Deleted Devices page and delete it again from there. Otherwise PMH keeps the site just like the Windows recycle bin makes you empty your recycle bin after you have already deleted your file.

Note: To delete a site from PMH, first delete the site from the Registered Devices page and then delete it from the Deleted Devices page. You must delete your site from BOTH pages.

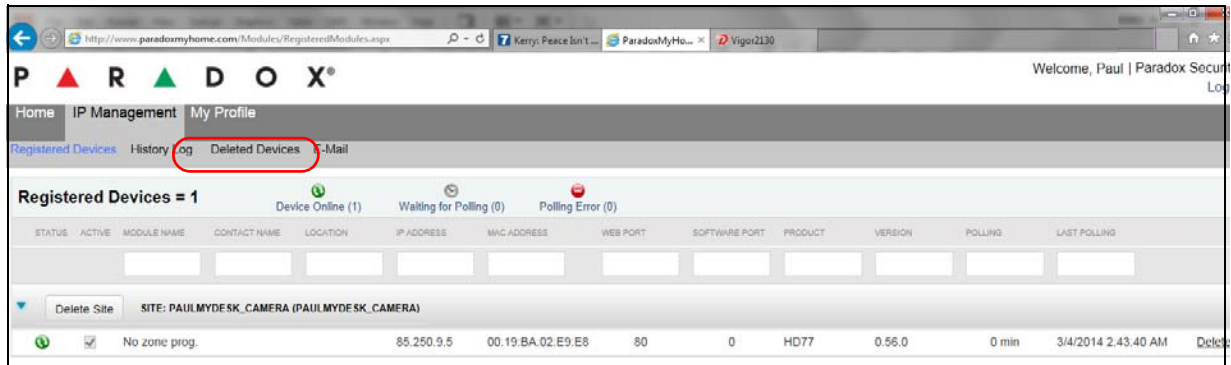


Figure 53 – ParadoxMyHome Site

Chapter 7 Using a Static IP for the WAN

If the end user does NOT want to use the ParadoxMyHome DNS, he can use a static IP for the WAN. To do this the end user will need to get a static IP from his Internet Service Provider (ISP).

1. Get a Static IP from your Internet Service Provider (ISP).
2. We do not recommend using UPnP with a static WAN IP Address, un-check the UPnP checkbox.
3. In BabyWare uncheck the PMH polling checkbox.

Receiver Account #	8118
Receiver Profile ID	254
TCP/IP Parameters	
HTTP Port	50083
DHCP Enabled	<input checked="" type="checkbox"/>
IP Address	010.000.000.132
Gateway	010.000.000.138
Netmask	255.255.255.000
Site Name	JOHN SMITH'S HOUSE
UPnP (Universal Plug and Play)	<input checked="" type="checkbox"/>
UPnP status	UPnP port forwarding is turned off
Poll PMH (ParadoxMyHome)	<input type="checkbox"/>

This DHCP is for the LAN and is not related to the WAN. It can be checked or not depending on your choice of DHCP for the LAN.

You will have to keep the UPnP box unchecked and do port forwarding on the WAN within the router.

Figure 54 – Poll PMH

4. Open the Paradox Insight™ App.
5. Through your smart phone configure the app to work with the Static IP. You will need to enter the IP address supplied by the ISP, along with the ports for the cameras. For more detailed directions see the Pradox Insight™ Application User Guide.

Note: The installer should not leave the house without verifying the VOD can be seen through the App!

Chapter 8 Upgrading Firmware

1. Use Babyware to upgrade firmware on all of HD77 cameras on your site. To update firmware on the HD77 you will need BabyWare V2.7 or higher.
2. Double click on any connected HD77 camera listed in BabyWare.

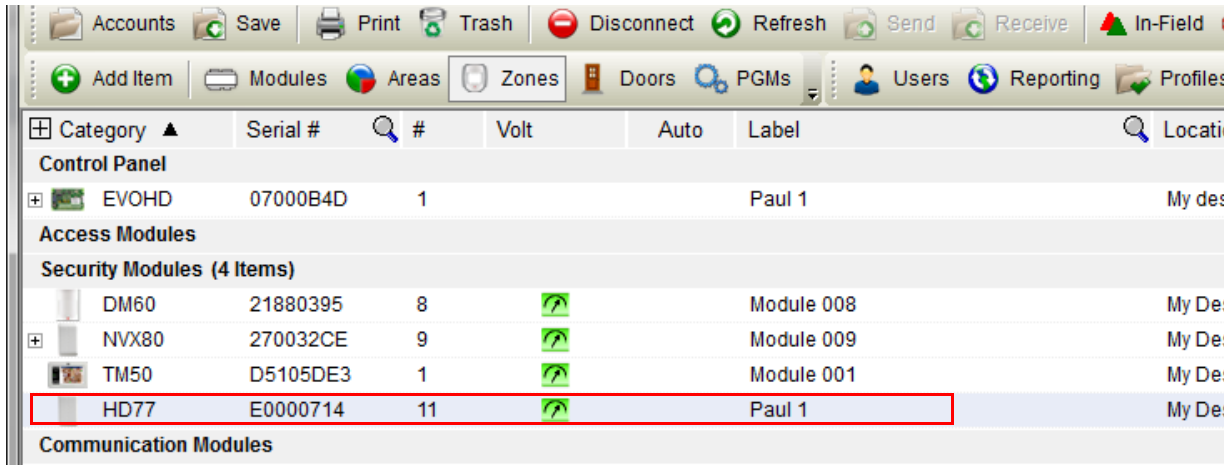



Figure 55 – Select HD77

3. On the HD77 programing page click **Update**  .

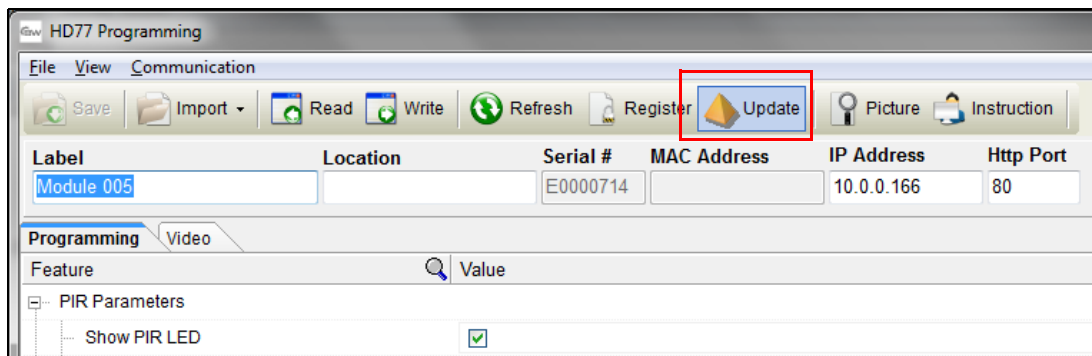


Figure 56 – Update button

The following window opens up.

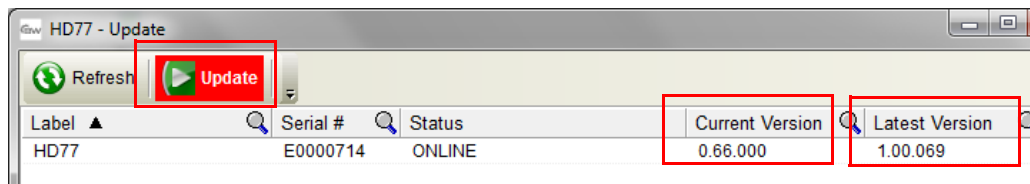



Figure 57 – Click Update

4. Click Update  in this window. This will take a few minutes.
5. In order to see if the firmware upgrade was successful, after the HD77 boots, disconnect and reconnect to BabyWare. You can also close down and restart BabyWare. Hover your mouse over the HD77 on the main page and you will see the FW version.

Appendix A Specifications

HD77 Specifications

Voltage Input	Nominal: 12VDC, range 9-16VDC
Maximum Current Consumption	200 mA without illumination LEDs 330 mA with illumination LEDs lit
Installation Height	2.1 m - 2.7 m (7 ft - 9 ft)
Purchase Options	IR illumination LEDs
Installation Options	<ul style="list-style-type: none"> • Wall or corner • Optional swivel bracket • One CAT5E cable or two separate cables one Ethernet and one combus
Coverage	12 m x 12 m (40 ft x 40 ft) / 110°
PIR Type	Quad PIR, Auto pulse, Auto dual edge, Digital detector
Micro SD Card Size	4GB
Camera Recording Resolution	720p
Video On Demand Recording Time	2 minutes each
Number Of VOD Files That Can Be Stored	~ 12 files
Alarm/motion Recording Time	10 seconds each
Pre-event Recording	3 seconds prior to PIR activation / alarm
Number of Alarm/motion Files that can be Saved on the Micro SD Card	~40 files
PIR and Video Linked Files	The file naming conventions link the PIR file with its corresponding video file
Detection Speed	0.2 m/s to 2.5 m/s (0.6 ft/s to 11.5 ft/s)
Image Sensor Type	1.4 Mega pixel, CMOS sensor
Angle of View (Camera)	62.7° (V) x 91.4° (H) x 121.4° (D)
Video Image Resolution	1280 x 720 pixels
Facial Identification	4.5 meters
Facial Recognition	7 meters
Streaming Video	360p H.264 10 FPS
Audio	16 bit, 16KHz sampling rate, 32Kb/s mono
Weight	166g (5.86OZ)
Physical Size	(H x W x D)15 cm x 7.5 cm x 5 cm (6 in x 3 in x 2 in)
Environmental	See the Paradox.com website for the latest certifications for this product. http://www.paradox.com/terms/
Operating Temperature	-10° C to +40° C (14° F to 104° F)

Appendix B PIR Detector Beam Pattern

The beam pattern for the detector is shown below.

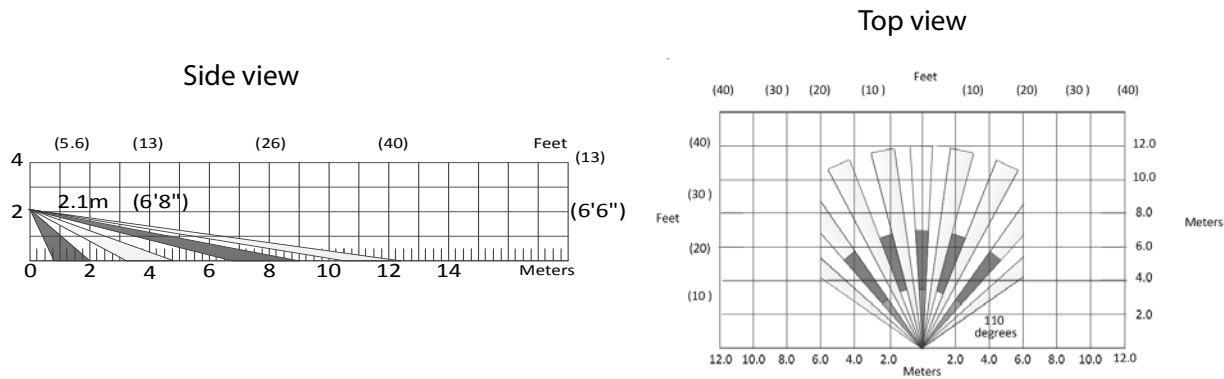

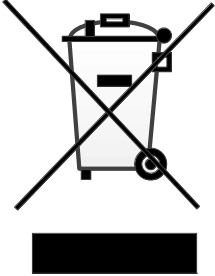


Figure 58 – PIR Detector Beam Pattern

Note: EN 50131 testing has been performed for 110 degrees.

Appendix C Certifications

Mark/	Area/Country	level/Grade/Class
	European Economic Area (EEA)	
	European Economic Area (EEA)	WEEE
		EN 50131-2-2 Grade 2 Environmental Class II Certification Body: Applica Test and Certification

FCC Statement Class B

This equipment has been tested and found to comply with the limits for Class B digital devices, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to equipment intermittently, the user is encouraged to try to correct the interference by one or more of the following measures:

- (1) reorient or relocate the receiving antenna;
- (2) increase the separation between the equipment and receiver;
- (3) connect the equipment to an outlet on a circuit other than the one to which the receiver is connected, or
- (4) consult the dealer or an experienced radio/tv technician for assistance.

Appendix D Un-Assemble Swivel Bracket

This swivel bracket is capable of:

- sweep angle from left to right of 90 degrees
- angle of declination (up and down) is 15 degrees

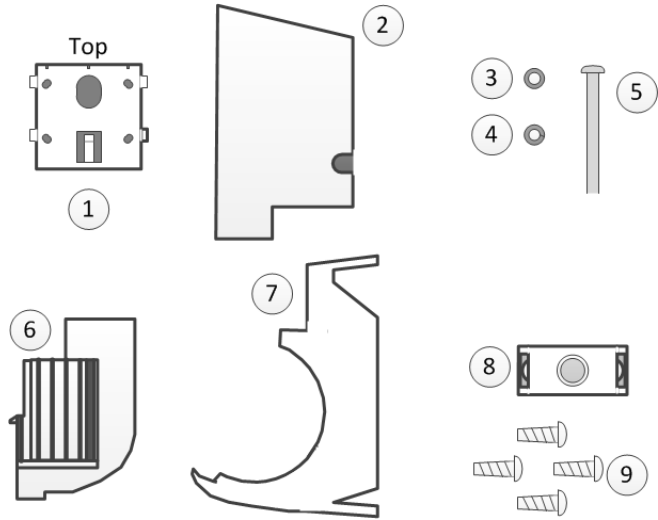


Table 5: Parts List

Part #	Description
1	Wall plate
2	Wall housing
3	Flat washer
4	Lock washer
5	Pan head screw #6-32
6	Back housing with nut installed
7	HD77 camera housing mount

Figure 59 – HD77 Swivel Bracket Parts

Disassemble Swivel

1. Remove the pan head screw.

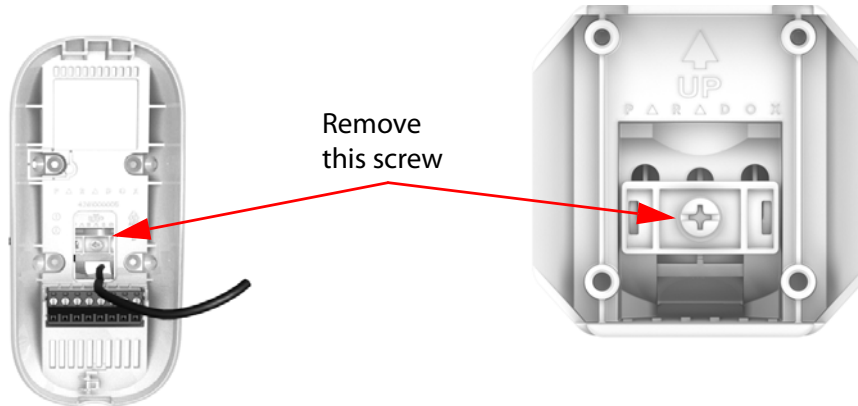


Figure 60 – Assembled Swivel Bracket

Do not drop the flat washer or the lock washer.
The two swivel sections remain connected.

Note: It is possible to separate the two swivel sections if necessary.

swivel (part #6)
and part 2

HD77 camera housing mount
(part 7)

Slider and
pan head
screw with
washers
(parts 3, 4, 5,
and 8)



Figure 61 – Screw the Slider, HD77 Camera Housing and Back Housing Together

2. Unlock the cover of the camera.
3. Separate the front cover from the backplate of the HD77 by carefully pulling out and sliding up.
4. Assemble the swivel mount.

Unlock cover



Figure 62 – Separating the Module from the Camera Housing

- Step 1. Pull the cable(s) through the wall plate (part #1) and screw the wall plate to the wall (screws and anchors are not supplied). The upper screws must be at least 3”(7.62cm) from the ceiling.
- Step 2. Pull the cables through the wall housing (part #2).
- Step 3. Attach the wall housing to the wall plate.

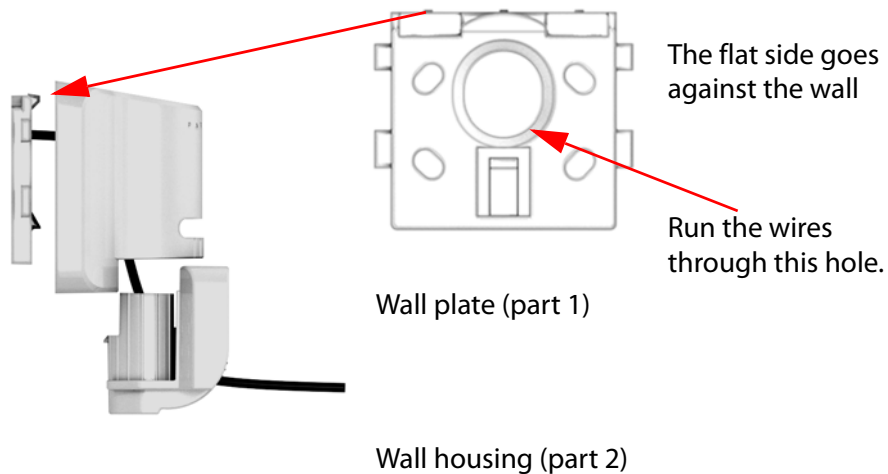


Figure 63 – Install the Wall Plate (part #1) and Wall Housing (part #2)

Step 4. Using the pan head screw with the lock washer and flat washer, connect the slider (part #8) and the HD77 camera housing mount to the back housing (part #6).

Step 5. Tighten the pan head screw.

back housing (part #6) HD77 camera housing mount (part #7)

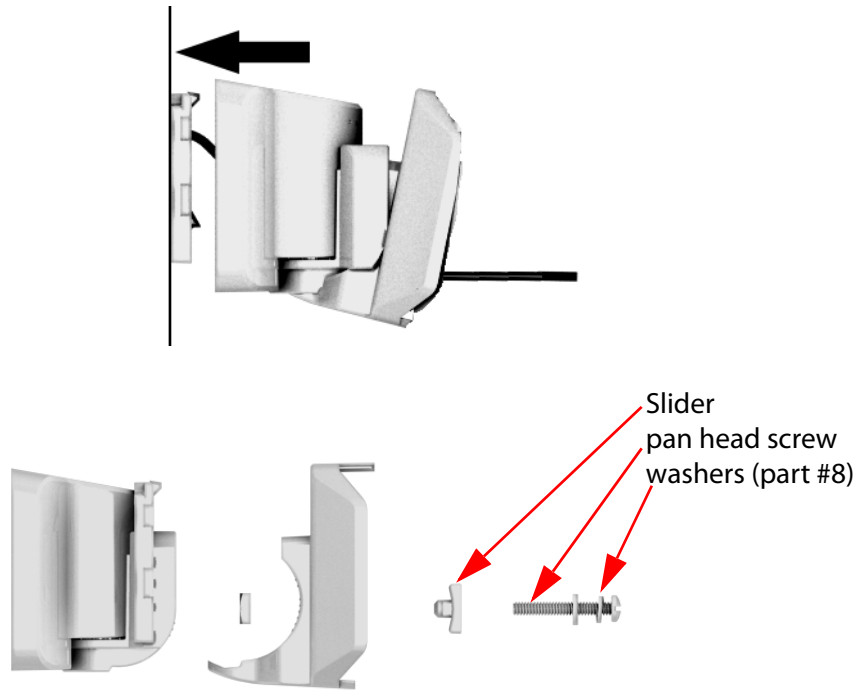


Figure 64 – Screw the Slider, HD77 Camera Housing and Back Housing Together

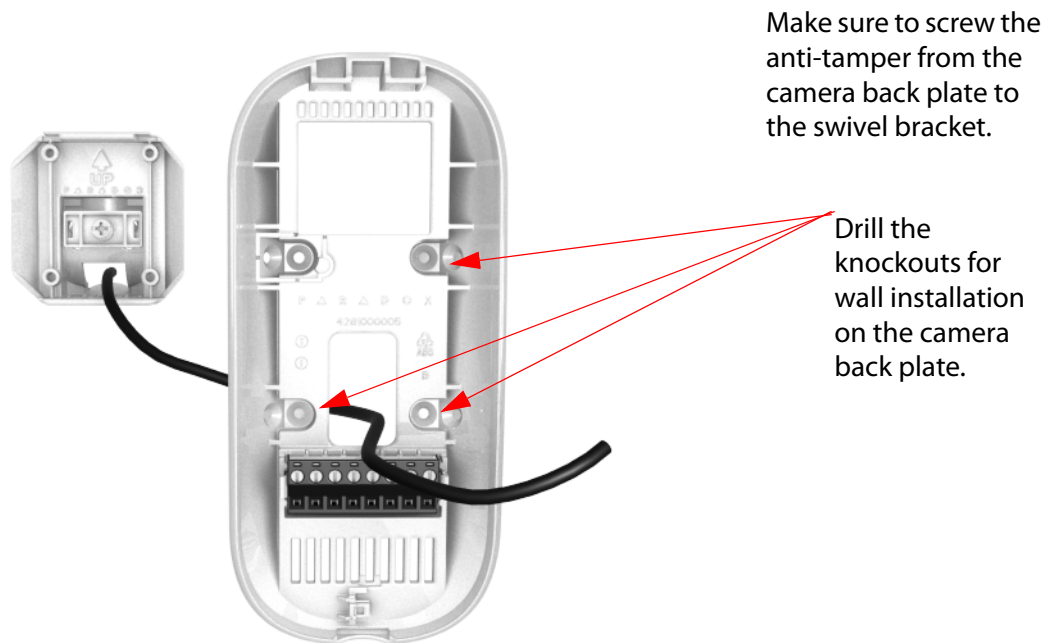


Figure 65 – Screw on Camera Back Plate to Swivel.

- Step 6. Drill the knockouts for wall installation on the camera housing.
- Step 7. Write the serial number of the module into your module table. Include the exact location of this module. If you are using BabyWare the serial number will be displayed, but you will need to write down the correct location for each module according to the serial number.
- Step 8. Screw the HD77 back plate to the housing mount using the 4 self tapping screws.

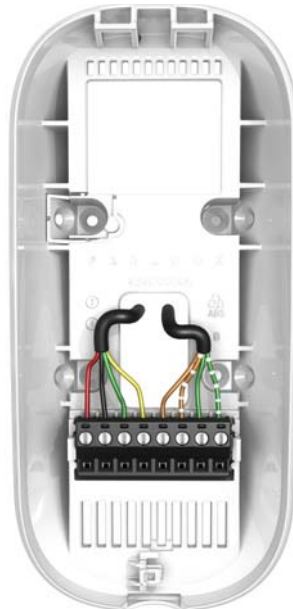


Figure 66 – Wire the Camera

- Step 9. Connect the combus wires and the Ethernet wires. See *Figure 4* and *Figure 5* for wiring instructions.
5. Close and lock the camera (front plate) into the back plate:
 - Step 1. Install the top of the unit.
 - Step 2. Close the HD77 onto the back plate.
 - Step 3. Close the lock mechanism at the bottom of the device.
- Note:** By securing the lock, the installer diagnostic LEDs will be turned off.
6. Connect the Ethernet line to the router (if not already connected). Make sure the router is turned on.
 - Step 1. Adjust the camera position and confirm camera view using Babyware.
 7. Continue on [see section 2.](#) on page 18.

Appendix E Configure IP Router (1 Example)

With the IP150 and Cameras wired to the router, In order to configure your system for a static IP perform the port forwarding and reserve the IP addresses of the IP150 and the HD77cameras.

Note: This procedure is dependent upon the individual router and network security of the end user's system.

The following provides an example for one type of router. Refer to the router manufacturer's documentation for detailed instructions. If the end user does not have his router documentation you can find the correct instructions online.

Setting Up the Router for Port Forwarding

Following is an **example** of instructions for port forwarding.

Note: Different routers may require different instructions.

1. Ensure that the router is connected properly as indicated in the router's instructions.

2. Access your router's configuration page:

Step 1. Refer to your router's manual for the exact procedure. In most cases, this is done by entering the router's IP address in the address bar of your web browser. Your router's IP address may be indicated in the router's instructions or on a sticker on the router.

Step 2. If you cannot find the IP address of the router, try the following from your Windows Screen:

Step a. Open a command prompt window. Press the windows button on your keyboard. In the search programs and files window type in Command.

Step b. Select Command Prompt.

Step c. At the prompt Type **ipconfig**

Step d. Press Enter.

The router IP address will be the **Default Gateway :xx.xx.xx.xxx**

```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Users\Paul>ipconfig
Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : lan
    Link-local IPv6 Address . . . . . : fe80::e19e:9a4c:3816:ee84%11
    IPv4 Address. . . . . : 10.0.0.216
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.0.0.138

Tunnel adapter isatap.lan:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : lan

Tunnel adapter Local Area Connection* 11:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Tunnel adapter Teredo Tunneling Pseudo-Interface:

    Connection-specific DNS Suffix  . :
    IPv6 Address. . . . . : 2001:0:5ef5:79fb:812:2fc4:f5ff:ff27
    Link-local IPv6 Address . . . . . : fe80::812:2fc4:f5ff:ff27%14
    Default Gateway . . . . . : ::

C:\Users\Paul>
```

Figure 67 – Command Prompt ipconfig

- Step e. Enter this IP address into the address bar at the top of the browser page. Press **Enter**.
- Step f. Put in the user name and password. If you do not know the user name and password, go to the site www.routerpasswords.com and select your router manufacturer and model. The default user name and password should be listed.

Step 3. 10.0.0.138 is an example for the router IP address as seen in *Figure 67*.

Note: Many routers have the IP address 192.168.1.1.

3. In the router’s configuration page, check the DHCP settings:

- Step 1. If DHCP is not enabled, verify that the IP address range is large enough to accommodate all of your cameras. Four cameras will require 4 IP addresses.

LAN >> General Setup

Ethernet TCP / IP and DHCP Setup

LAN IP Network Configuration

For NAT Usage
 IP Address: 10.0.0.138
 Subnet Mask: 255.255.255.0

For IP Routing Usage Enable Disable
 IP Address: 192.168.2.1
 Subnet Mask: 255.255.255.0

Fast-Forward Enable Disable
 2nd Subnet DHCP Server Enable Disable

PPPoE Passthrough

DHCP Server Configuration

Enable Server Disable Server
 Enable Relay Agent
 Start IP Address: 10.0.0.1
 IP Pool Counts: 250
 Lease Time: 1 minutes

Force DNS manual setting

Enable
 Primary IP Address: 0.0.0.0
 Secondary IP Address: 0.0.0.0

Note: Enable Fast-Forward: High throughput but can not be controlled (Only work in WAN Static IP/DHCP mode).

OK

Figure 68 – DHCP Enable

- Step 2. Record one address at the upper end of the DHCP range for each HD77 in your system.
- Step 3. DHCP Settings (screenshot may differ depending on type of router used).

4. Set up port forwarding for the IP address.

- Step 1. In the router’s configuration page, go to the Port Forwarding section (also known as “port mapping”, “NAT”, (network address translation), or “port redirection”).
- Step 2. Select an available port on the router and assign it to the HD77 camera. Select a port above #10000 for the port.

NAT >> Open Port

Edit Port Forwarding Entry

Enable

Name: Paul1

Protocol: TCP+UDP

WAN IP: ALL

Start Port: 50042

End Port (optional): 50042

Local Host: 10.0.0.132

Local Port (optional): 50042

OK Cancel Delete Entry

Figure 69 – Fill in the Port Forwarding Information

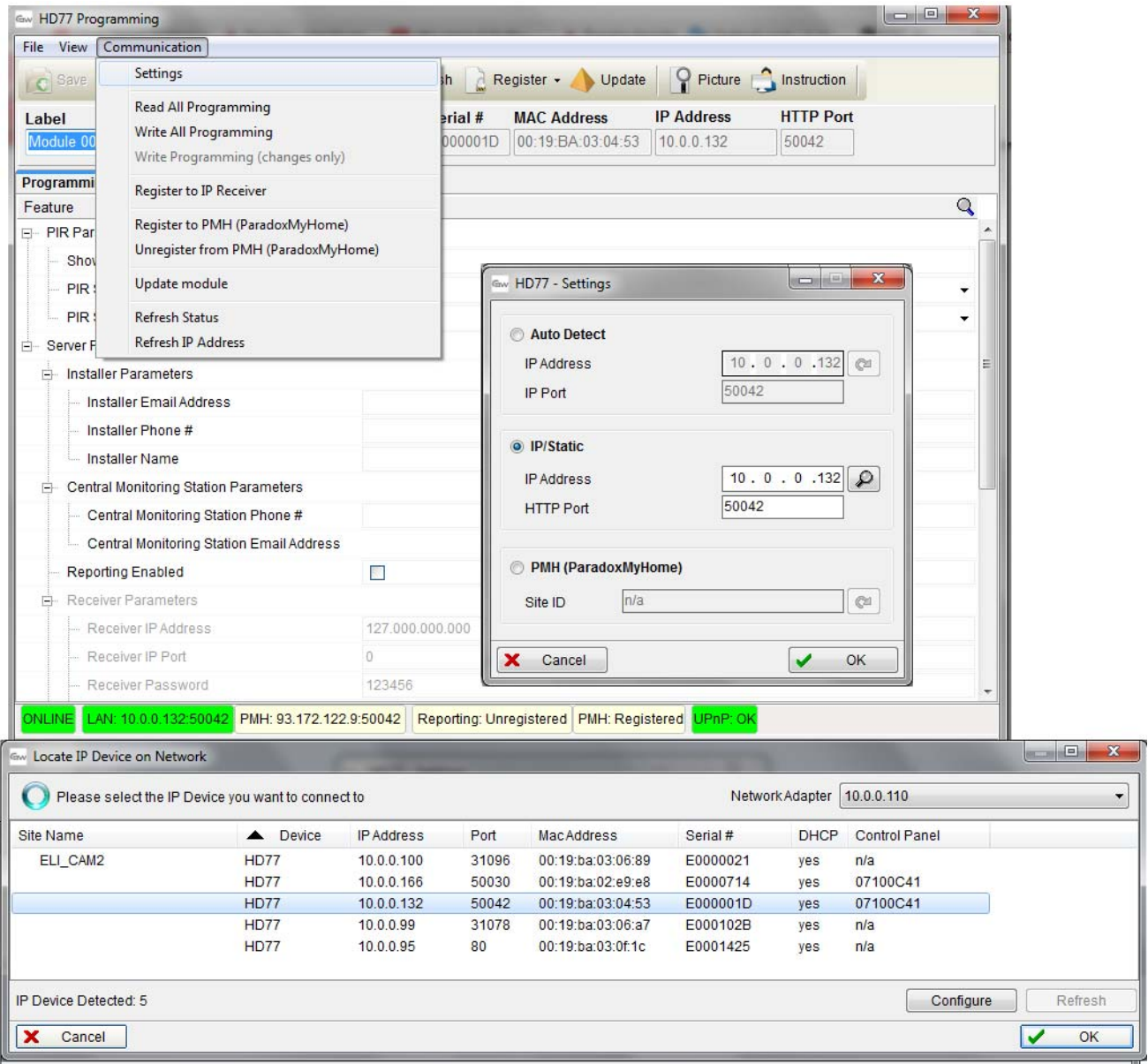


Figure 70 – Port Forwarding

Note: Example of IP addresses and ports for 4 cameras.

Table 6: Cameras, IP Addresses, and Port Numbers

Camera name	Location	IP Address	HTTP port #
Living room	facing front door	10.0.0.132	50042
Den	facing sliding rear door	10.0.0.133	50053
Safe room	facing the safe	10.0.0.134	50063
2nd floor	looking down the staircase	10.0.0.135	50073

Note: Each camera needs a separate IP address and matching external port.

Reserve the IP or Bind the IP to a MAC

You need to bind the HD77s mac address to an IP address within the router's DHCP range. This is called reserving an IP address or binding an IP address.

This is done on the router, just like you connected to the router for port forwarding you will need to connect for reserving a port. This should be under the LAN properties.

Since each router is different you may need to use the router user manual or search online for instructions for your particular router.

You can also try searching the Internet for videos on routers and reserving IP addresses (screen shots may differ depending on type of router used).

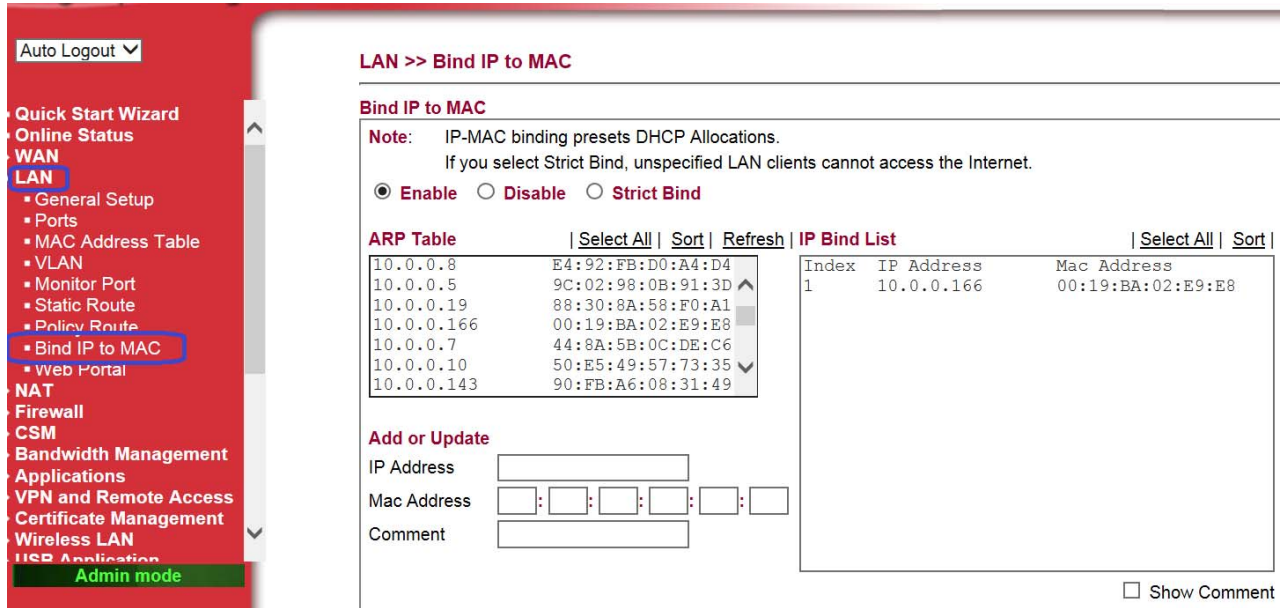


Figure 71 – Binding or Reserving a Port

Once the IP is successfully reserved:

1. Right click the HD77 camera.
2. Go to **Communications => Settings.**

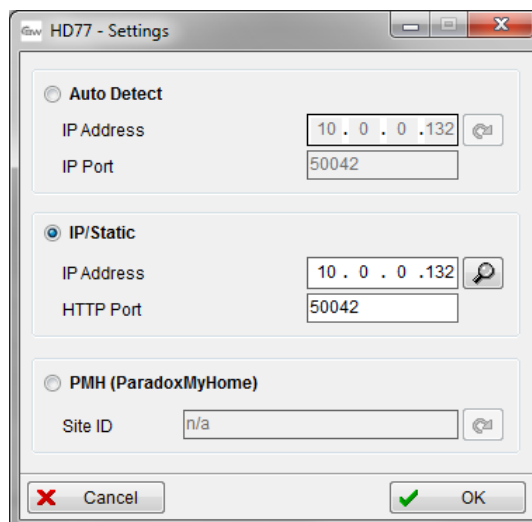


Figure 72 – HD77 Settings

3. Select IP Static. Use the IP address and port number you selected in the router binding and port forwarding.

4. Click  .

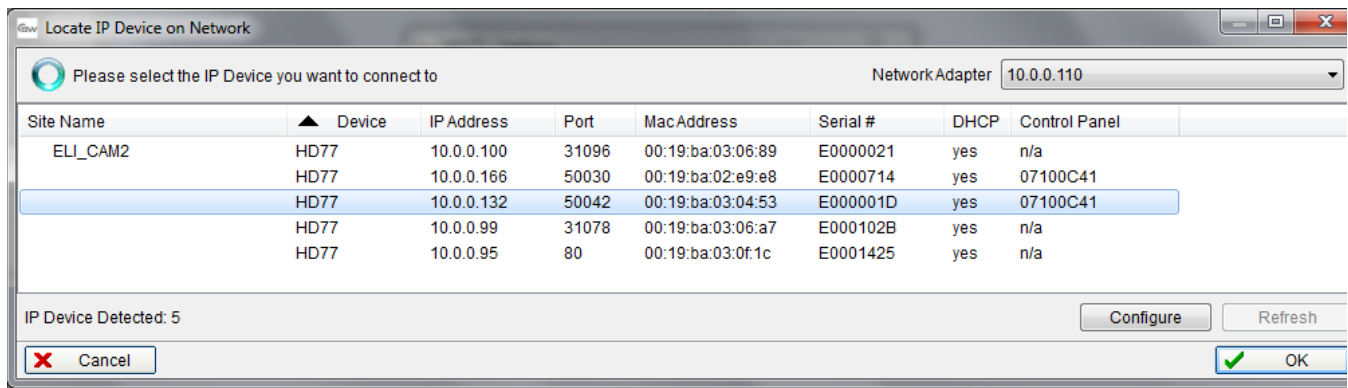


Figure 73 – Locate Static IP Addresses

5. Select the IP address with port for your static IP.
6. Click **Configure**.
7. Click **OK**.
8. Repeat the process for each HD77 camera.

P ▲ R ▲ D O X™

The whole Paradox team wishes you a successful and easy installation.
We hope this product performs to your complete satisfaction.
Should you have any questions or comments, please contact us.

For support, please contact your local distributor, or dial +1-450-491-7444,
Monday to Friday, from 8:00 a.m. to 5:00 p.m. EST.
You may also e-mail us at support@paradox.com.
Additional information can be found at PARADOX.COM

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