ADPRO XO eFT-S

Hardware Installation Guide

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Honeywell

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The following typographic conventions are used in this document:

Convention	Description
Bold	Used to denote: emphasis. Used for names of menus, menu options, toolbar buttons…
Italic	Used to denote references to other parts of this document or other documents. Used for the result of an action.

The following icons are used in this document:

Icon	Description
	Note. This icon indicates information of special interest that will help the reader make full use of the product, optimise performance, etc. Failure to read the note will not result in physical harm to the reader, or damage to equipment or data.
	Caution! This icon indicates danger to equipment. The danger can be loss of data, physical damage to the equipment, or permanent corruption of configuration details.
	Warning! This icon indicates danger of physical harm to the reader. Not following instructions may lead to death or permanent injury.
	Warning! This icon indicates danger of electric shock. This may lead to death or permanent injury.

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Environmental Information



The crossed-out wheeled bin means that within the European Union the product must be taken to separate collection at the product end of life. This applies to the device but also to any accessories marked with this symbol. Do not dispose of these products as unsorted municipal waste.

If you need more information on the collection, reuse, and recycling systems please contact your local waste administration. You can also contact us for more information on the environmental specifications of our products.

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1 Technical Specifications

Operating system	ADPRO®XO™ Security Operating System, Linux based
Video input	8–16 IP cameras
Video output	**HDMI(2)**: HDMI x 1 (4 K Max), VGA x 1 (1080 P) **Note** HDMI resolution must be set in accordance with the resolutions available on the **Monitor** screen on the XO Software Client.
Video compression	H.264/H.265 (H.265 supported with Honeywell, ONVIF, and generic driver)
Video resolution	Up to 4K resolution; For optimal performance, when using 4K cameras on XO device, the number of cameras and analytic channels (IntrusionTrace and/or LoiterTrace) supported is reduced in proportion to the resolution. ***Caution!*** Using 2x higher framerate cameras reduces the total available camera by 1 (affects system performance and may result in reduced number of usable cameras).
Frames/second	Full HD/1080p @25/30 fps (PAL/NTSC)
Bandwidth capacity (video)	16 x 5 Mbps
Bandwidth management	Configurable variable or constant bitrate / Configurable bandwidth limiter
Audio input	IP camera audio input supported
Audio output	Analog audio output (jack 3.5mm) and Digital audio out from IP cameras. Zoned audio supported.
Command inputs	On-The-Box alarm I/O (unmonitored): 6 alarm inputs on eFT-S. External alarm I/O: Via Net I/O unit with PoE. • Can add more I/O with Net I/O units: up to 128 Monitored Inputs via the network • .Can add more I/O with usb units:up to 40 monitored Inputs via the usb **Note** On-The-Box I/O will be disabled when external I/O is used.
Management	XO client, ADPRO VCP, third-party software (SDK available), iOS/Android iTrace app
Power supply	100-240V AC, 50/60 Hz **Note** You must connect the video system to a 100–240 V~ mains outlet with proper earthing, applying a separate, locally approved power cord.
Power Consumption	Max. 180 W; 15 W without HDD PoE Ports Output Power: 130W max. (30W max. for a single port)
Operating temperature	-10°C ~ 55°C (14°F ~ 131°F)
Humidity	Less than 90% RH

Disk capacity	max. 2 x 10 TB SATA hard disks. RAID 1 support (requires min. 2 equal HDDs).
Warranty	5 years
Dimensions (W x H x D)	372.0 × 313.3 × 46.5 mm (14.65 × 12.33 × 1.83 inch)
Analytics	Basic motion detection (VMD), camera sabotage detection. Up to 8 analytic channels for IntrusionTrace™ and LoiterTrace™
Mobile apps	• iTrace: remote monitoring, verification, and control (iOS and Android). • iPIR: commissioning ADPRO PRO E-PIRs (iOS). **Note** iPIR is a phone app specially used for the commissioning of PIRdetectors.
Performance as NVR	Under the following conditions: • NVR is replaced by a XO device • The site is using only single stream Full HD (1080p/25fps) IP cameras • XO is using only the generic driver Expected performance: • Maximum 2 cameras on eFT-S platforms
Ordering information	• Please contact your local ADPRO provider for detailed product information.

2 About eFT-S Series

Note

You can find the latest versions of this document and any referenced document on the Security Solutions Support site https://myhoneywellbuildingsuniversity.com/ (logon may be required). If a document number is indicated (between parentheses), you can enter it in the Keywords box on the site, and search for the document.

2.1 Models

The eFT-S Series devices are available in 16 channel and 8 channel models. The following are the eFT-S variants:

- 682020060/682021360: 8 channel model with 8 inbuilt PoE switches
- 680020060/680021660: 8 channel model with no inbuild PoE switches

The 8 channel models (682020060/682021360/680020060/680021660) supports 8 video channels and up to 8 analytics channels. The eFT-S Series supports balancing mode in which one video channel is traded against one analytic channel, and 16 is the highest possible total for the sum of video and analytics channels. The following are some of the usage scenarios:

- 16 Video Channels + 0 Analytics channels
- 8 Video Channels + 8 Analytics Channels

Note

Wherever **XO device** is mentioned in this document, it applies to all the devices above, unless specifically mentioned otherwise.

Multi-site configuration is possible:

- Integration of up to 10000 XO devices
- Remote video and audio, live video, and consultation of recordings
- Compatible with VCP and third-party CMS.
- SDK for third-party integration.

2.2 Licenses

2.2.1 Overview

All XO devices require licenses:

- System license
- IP video channel licenses
- (Optional) PIR interface license (PIR-HLI)
- (Optional) Analytic application licenses: IntrusionTrace and LoiterTrace.

2.2.2 System License

The system license defines the maximum number of video channels allowed, and the maximum number of analytic channels allowed on your system.

Note

The system license is locked on the XO device's motherboard and is therefore system specific: the license has to include the correct MAC address. You cannot transfer a system license from one device to another.

2.3 Software

The eFT-S device has Xchange 2 fixed license.

Caution!

Honeywell issues upgrade information with every major software upgrade. Upgrade information may consist of system requirements, special upgrade instructions, etc. Before installing new software, make sure that you **read and understand the upgrade information** first. Always follow the instructions in the upgrade documentation. If in any doubt, do not install the new software.
You can find upgrade instructions on the Security Solutions Support site https://myhoneywellbuildingsuniversity.com/ (listed under Field Alerts). Also check the Release Notes (listed under Product Release) for information on solved bugs or known issues.

3 Hard Disks

3.1 Required Hard Disk Capacity

As there are many configuration possibilities, Honeywell has a hard disk space calculator available. You can find this hard disk space calculator on the Security Solutions Support site https://myhoneywellbuildingsuniversity.com/ (logon required). Search for keyword 'calculator'.

Note

The calculator is an estimating tool only. Figures are purely indicative. The real requirements of the hard disk capacity depend on scene content.

With firmware XO 4 and above, you can specify a minimum number of days to keep recordings on the hard disks. The system will calculate if there is sufficient space on the hard disks in the XO device, and it will activate system input 0050 – [SYST] – STORAGE INSUFFICIENT if this is not the case. The system calculates the required hard disk space based on the past recordings. For details, see the *XO Client Software User Manual* (21796).

The eFT-S Series devices are standard delivered without, or with 1 hard disk inside. You can install maximum 2 hard disks.

3.2 Adding/Replacing a Hard Disk

If the system is running out of disk space, you can add a new hard disk without removing any of the hard disks in use.
If you receive error messages from your hard disk in the **Status** screen of the XO client, you may need to replace the faulty hard disk.

The eFT-S Series devices need only screws for mounting hard disks.

Use these reference numbers to place your order with Honeywell:

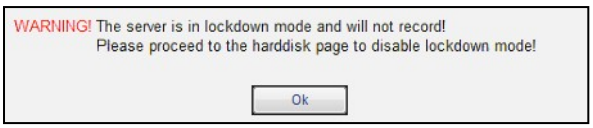
HDD capacity	Disk reference number
1 TB	19150240
2 TB	19150250
4 TB	19150270
6 TB	19150280
8 TB	19150290
10 TB	19150300

Note

Not all hard disks are compatible with all firmware versions. Upgrade your device to firmware version XO 4.5 or above for full compatibility.

3.3 Reusing Used Hard Disks

It is possible to mount a hard disk coming from another device into a new device. However, you must **format the used hard disk** to erase all data on the disk to prevent any conflicts or data damage. In addition, if you install a used disk in an XO device that runs firmware version XOa 3.00 or above, the system may enter the **hard disk lockdown mode**: recording is then not possible. The following message will appear:



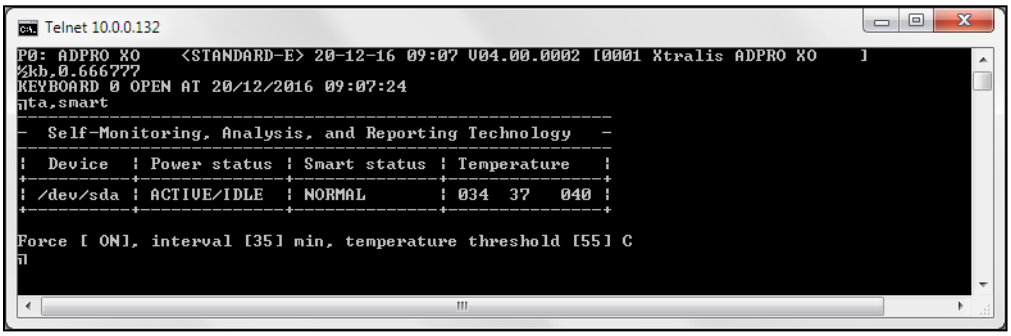
If you want to install a disk from another device, and you need to recover the recordings that are on the used disk, follow the instructions in the Tech Tip *Recovering Recordings from Used HDDs* (29160).

3.4 Retrieving Hard Disk Information

You can retrieve hard disk information and identify possibly faulty hard disks using the Telnet **ta,smart** command, or using the XO client software.

3.4.1 Using the ta,smart Command

SMART stands for Self-Monitoring Analysis and Reporting Technology. Execute the **ta,smart** command in a Telnet session to obtain the SMART information for all hard disks in the XO device.

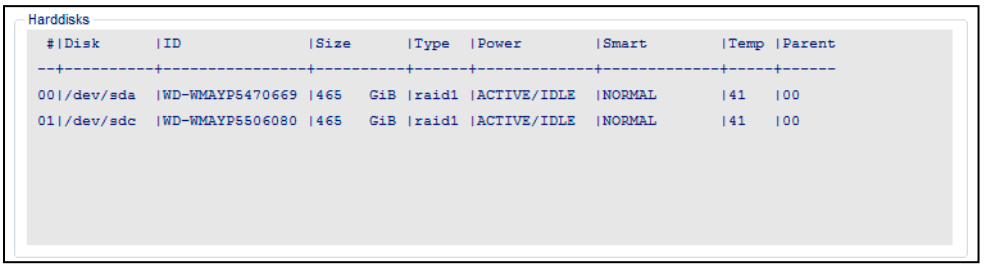


The screen displays the following information:

Item	Description
Device	Device name of the hard disk (Linux).
Power status	The power status column displays one of the following statuses: • **ERROR**: there is a problem retrieving the power status of the drive • **ACTIVE/IDLE**: drive operates normally • **STANDBY**: drive is in low power mode (drive is in spin-down status) • **SLEEPING**: drive is in lowest power mode (drive is completely shut down).
Smart status	The smart status column displays one of the following statutes: • **ERROR**: drive is failing • **ALERT**: there is a problem retrieving SMART info from the drive, or the drive may be in the process of failing • **NORMAL**: no problems found with the drive.
Temperature	The temperature column displays from left to right: • the minimum temperature of the disk • the current temperature of the disk the maximum temperature of the disk.
Force	• **ON**: SMART is checked on disk in STANDBY or SLEEPING mode. **OFF**: SMART is only checked on disks in ACTIVE/IDLE mode.
Interval	Indicates the interval (in minutes) between SMART checks.
Temperature threshold	If the disk temperature is higher than the temperature threshold, the system activates system input 0102 – [SYST] – SMART HDD ALERT TEMP.

3.4.2 Using the XO Client Software

To obtain to obtain the (SMART) information for all hard disks in the XO device in the XO client, choose **System** > **Maintenance** > **Harddisks**. The **Smart** column shows the operational status of the hard disks; the **Temp** column indicates the temperature.



3.5 Installing the Hard Disks

Up to 2 hard disks can be installed for eFT-S variants. The eFT-S model is packaged with the required accessories listed in the following table:

Accessory	eFT-S
Power Cord	1
SATA Power Cable	2
SATA Cable	2
HDD screws	12
Feet pad	4
Rack Mount brackets including screws	2
USB Mouse	1

Caution!

- Before installing hard disks, stop the device. Switch it off and unplug the power cord.
- Take all necessary precautions to prevent static discharges that may damage the device: use an anti-static wristband, an anti-static mat…
- The procedure below assumes that you are using a **new disk**, or, in case of a used disk, that you will **format the used disk** and erase all recordings on it. If you want to install a used hard disk while keeping the recordings on it, follow the instructions in the Tech Tip *Recovering Recordings from Used HDDs* (29160).

3.5.1 Installing 1 or 2 Hard Disks

To install the hard disks, proceed as follows:

1. Stop the device, switch off the power supply, and then remove the top cover: Unscrew 5 screws in total on three sides of the NVR.



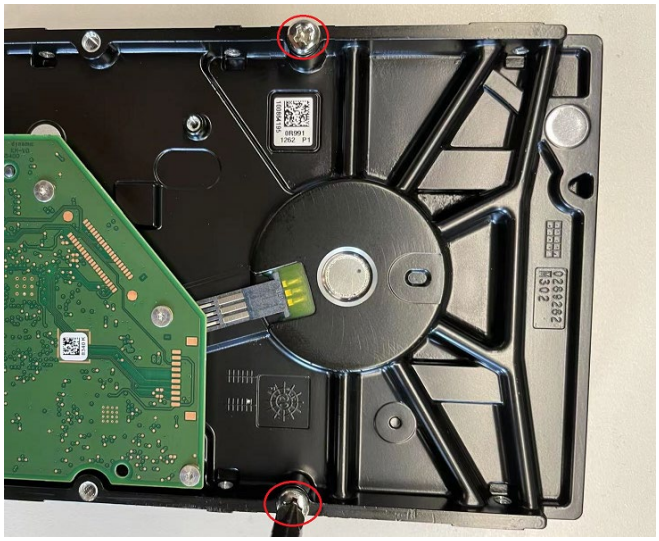
Note

The below description is taking 682021360 as an example.

2. Take out 1~2 HDDs. Place 2 screws on each HDD as below. Lock these 2 screws loosely.

Note

Don’t tighten the 2 screws.

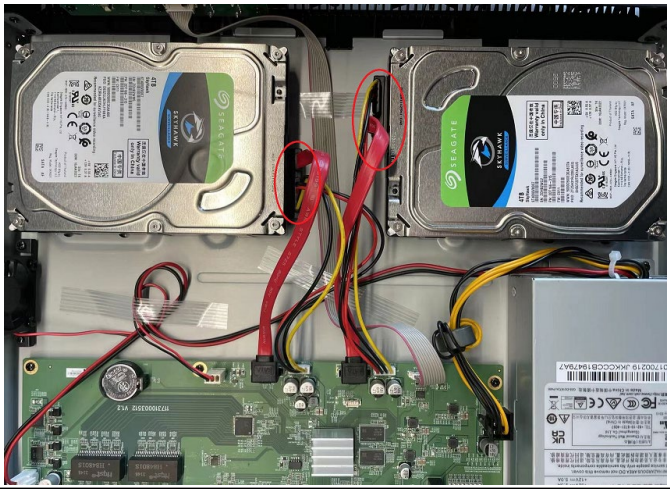


3. Slide the HDD gently in the NVR, making sure the 2 screws in step 1 are in the following screw holes: No.1 and No. 2 as shown below. Tighten screws for No.1 an No. 2 and add two more screws for No.3 and No. 4 and tighten up them. (Some HDDS require up to 6 screws to install.)

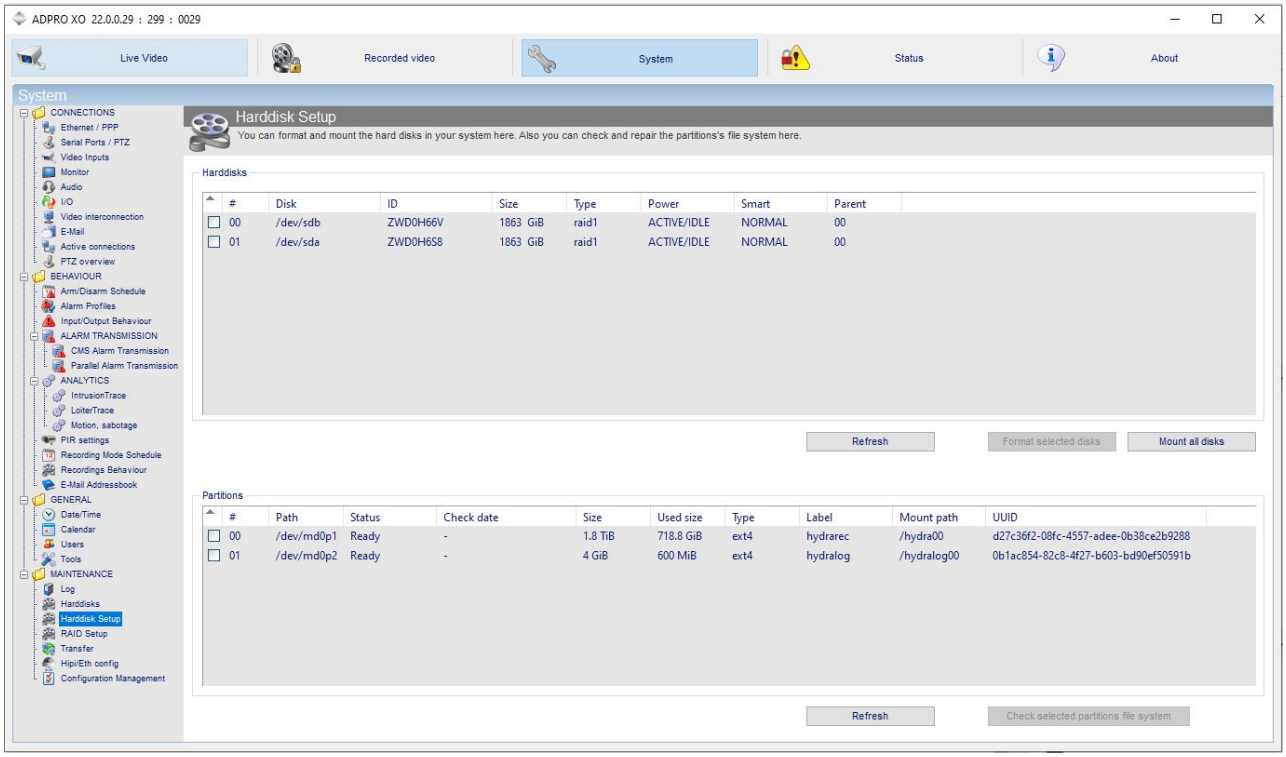




4. Plug the SATA and power connectors into the HDDs.



5. Place the top cover back: fix it with 5 screws in total on three sides of the NVR.
6. To setup the hard disk information, choose **System > Maintenance > Harddisk Setup**. The **Harddisk Setup** menu is supported to be displayed for Technician users. This page will display the list of disks on the current device.



Harddisks: overview of the physical hard disks in the XO device.	
#	Sequence number of the hard disk.
Disk	Device name of the hard disk (Linux).
ID	Serial number of the hard disk.
Size	Hard disk size in GB.
Type	Disk type: • **disk: normal writing disk.** • **raid: RAID 1 disk.**
Power	The power status column displays one of the following statuses: • **ERROR**: there is a problem retrieving the power status of the drive • **ACTIVE/IDLE**: drive operates normally • **STANDBY**: drive is in low power mode (drive is in spin-down status) • **SLEEPING**: drive is in lowest power mode (drive is completely shut down).
Smart	The smart status column displays one of the following statutes: • **ERROR**: drive is failing • **ALERT**: there is a problem retrieving SMART info from the drive, or the drive may be in the process of failing • **NORMAL**: no problems found with the drive.
Parent	For RAID 1 disks: the sequence number of the parent disk (mount point).
Refresh	Click the **Refresh** button to refresh the current disk list.
Format selected disks	Check the target disk and click the **Format selected disks** button for disk formatting.

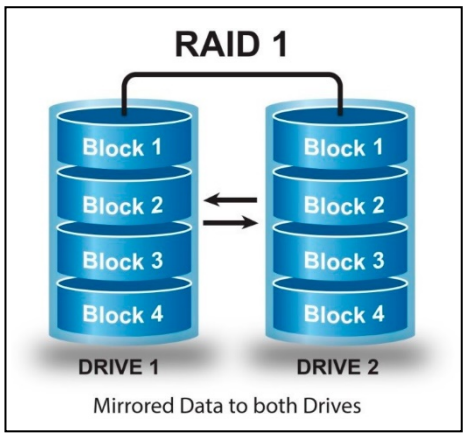
	Note Disks in RAID status are not allowed to be formatted. The user needs to check on the RAID page to see if the selected disk is included in the RAID list.
	Formatting the disk will require the device to restart immediately. After the user clicks yes to confirm, the device will restart and format.
Mount all disks	Click the **Mount all disks** button to mount all disks and display them in the disk list. This operation will require the device to restart immediately, and the user should confirm the operation.
Partitions: overview of all partition information on the current device.	
#	Sequence number of the partition.
Path	Disk partition path
Status	When the user select a partition and click **Check selected partitions file system** button, the NVR will check the status of the selected partition and the **Status** will be updated, and the Check date will show the time of the last check.
Check date	The time for the last check
Size	Partition size in GB.
Used Size	Partition size used in GB.
Type	Format type
Label	Partition label: hydrarec: video disk hydralog: log disk
Mount path	Mount point for partition
UUID	Universally Unique Identifier
Refresh	Click the **Refresh** button to refresh the current partitions list.
Check selected partitions file system	This operation will require the device to restart immediately, and the user should confirm whether to continue the operation.

3.6 RAID 1 Support

3.6.1 About RAID 1

RAID stands for Redundant Array of Independent Disks (originally Redundant Array of Inexpensive Disks). It is a storage technology that combines multiple disk drive components into a logical unit. Data is distributed across the drives in one of several ways called RAID levels, depending on the level of redundancy and performance required. RAID has become an umbrella term for computer data storage schemes that can divide and replicate data among multiple physical drives, while the operating system can still access the data as being on one single drive.

RAID 1 is about mirroring without parity or striping. Data is written identically to two drives, thereby producing a “mirrored set”: the read request is serviced by either of the two drives containing the requested data, whichever one has the shortest search time plus rotational latency.



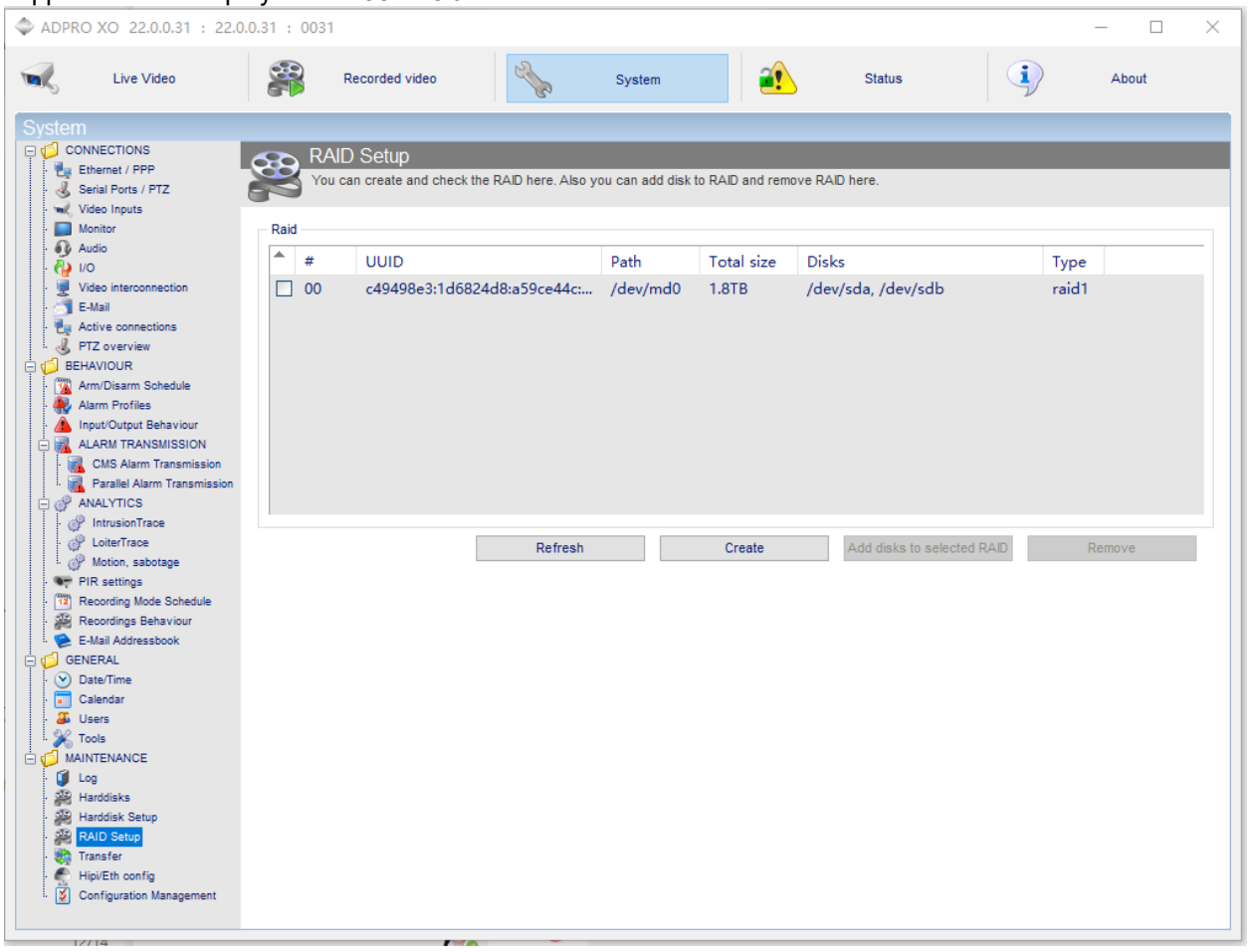
3.6.2 Activating RAID 1

RAID 1 requires minimum 2 hard disks. The size of the RAID 1 recording combination is the smaller of the 2 disks installed in your device. For example: if you have a 1 TB disk and a 2 TB disk, the RAID 1 recording disk has a 1 TB capacity.

> ***Caution!***
>
> When you apply RAID 1, the system formats the selected disks and erases the data on the disks. You will lose all the data on the disks. Back up your recordings first.

To activate RAID 1, proceed as follows:

1. Stop the device and switch off the power supply.
2. To setup RAID information, choose **System** > **Maintenance** > **RAID Setup**. The **RAID Setup** menu is supported to be displayed for **Technician** users.



Raid: overview of the Raid information.	
#	Sequence number of the Raid.
UUID	Universally Unique Identifier
Path	RAID 1 path
Total size	Total size of RAID 1
Disk	Disk name of the RAID 1
Type	RAID 1 type
Refresh	Click the button to update the RAID1 list info.
Create	Click **Create button** and select at least two disks on the pop-up window to create RAID. This operation will require the device to restart immediately, and the user should confirm the operation.
Remove	Select RAID and click the **Remove** button to remove the RAID. This operation will require the device to restart immediately, and the user should confirm the operation.
Add disks to selected RAID	This function is not applicable because currently eFT-s does not support 4 disks.

Note

During RAID1 recovery status, please do not remove the hard driver.

3.6.3 Retrieving RAID 1 Information

You can retrieve RAID 1 information using the Telnet **ta,hd,raid** command, or using the XO client software.

To check if disks are in RAID 1 mode in the XO client software, proceed as follows:

1. Launch the XO client software.
2. Choose **System** > **Maintenance** > **Harddisks**. The following screen appears:

MountPoints

```
 #| Total size | Free      | Type  | Fsck  / Cnt  |  W/D | State
--+------------+-----------+-------+--------------+------+-----------------------------------
00| 1829   GiB | 146   GiB | raid1 | NO    / 0    | WD   |
01| 454    GiB | 36    GiB | raid1 | NO    / 0    |      |
```

Harddisks

```
 #|Disk      |ID               |Size      |Type  |Power        |Smart        |Temp |Parent
--+----------+-----------------+----------+------+-------------+-------------+-----+------
00|/dev/sde  |WD-WCAVY6955576 |1863  GiB |raid1 |ACTIVE/IDLE  |NORMAL       |33   |00
01|/dev/sdb  |WD-WMAY05268284 |1863  GiB |raid1 |ACTIVE/IDLE  |NORMAL       |36   |00
02|/dev/sdc  |WD-WCASYA469769 |465   GiB |raid1 |ACTIVE/IDLE  |NORMAL       |36   |01
03|/dev/sdd  |WD-WMAYP4812515 |465   GiB |raid1 |ACTIVE/IDLE  |NORMAL       |33   |01
```

The **MountPoints** pane displays the mount points (= writing disks). The **Type** column indicates whether the mount point is a normal disk (**disk**) or a RAID 1 disk (**raid1**).
The **State** column will indicate **degraded** when one of the RAID disks is faulty, and **recovering** when the system is resynchronising after replacing the faulty disk. It will also indicate the progress of the recovery process. For details, see the *XO Client Software User Manual* (21796).

The **Harddisks** pane displays the physical hard disk information. The **Type** column indicates whether the disk is a normal disk or a RAID 1 disk. The **Parent** column indicates the corresponding mount point.
The example above shows a device with 4 disks and RAID 1 (two mount points).

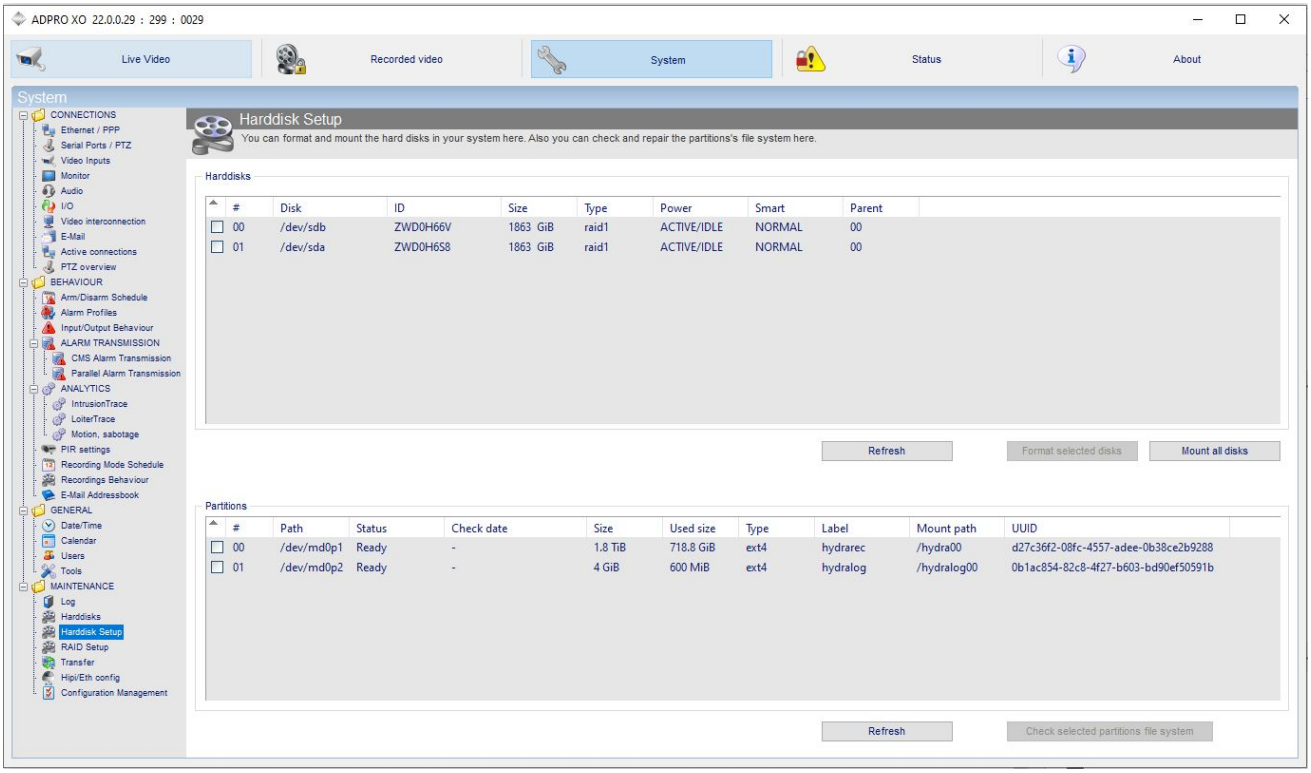
3.7 Remote Formatting of Hard Disks

As of firmware version XO 4.3, you can format the hard disks in your XO device remotely using the hardware

configuration tool. You do not have to use the XO Installer menu. If your XO device has several disks, you will format all the disks.

To format the hard disks in an XO device remotely, proceed as follows:

To setup the hard disk information, choose **System > Maintenance > Harddisk Setup**. The **Harddisk Setup** menu is supported to be displayed for Technician users. This page will display the list of disks on the current device.

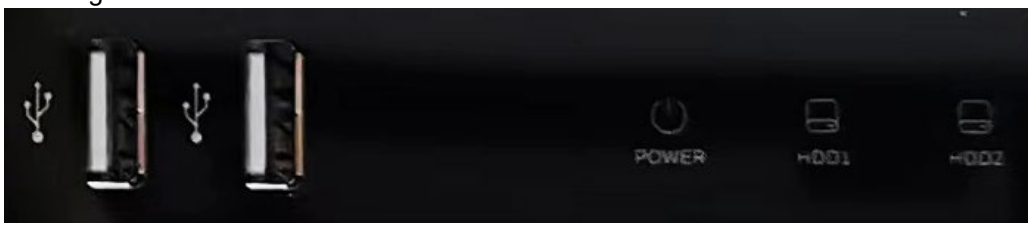


Harddisks: overview of the physical hard disks in the XO device.	
#	Sequence number of the hard disk.
Disk	Device name of the hard disk (Linux).
ID	Serial number of the hard disk.
Size	Hard disk size in GB.
Type	Disk type: • **disk: normal writing disk.** • **raid: RAID 1 disk.**
Power	The power status column displays one of the following statuses: • **ERROR**: there is a problem retrieving the power status of the drive • **ACTIVE/IDLE**: drive operates normally • **STANDBY**: drive is in low power mode (drive is in spin-down status) • **SLEEPING**: drive is in lowest power mode (drive is completely shut down).
Smart	The smart status column displays one of the following statutes: • **ERROR**: drive is failing • **ALERT**: there is a problem retrieving SMART info from the drive, or the drive may be in the process of failing • **NORMAL**: no problems found with the drive.
Parent	For RAID 1 disks: the sequence number of the parent disk (mount point).
Refresh	Click the **Refresh** button to refresh the current disk list.
Format selected disks	Check the target disk and click the **Format selected disks** button for disk formatting.

	Note Disks in RAID status are not allowed to be formatted. The user needs to check on the RAID page to see if the selected disk is included in the RAID list.
	Formatting the disk will require the device to restart immediately. After the user clicks yes to confirm, the device will restart and format.
Mount all disks	Click the **Mount all disks** button to mount all disks and display them in the disk list. This operation will require the device to restart immediately, and the user should confirm the operation.
Partitions: overview of all partition information on the current device.	
#	Sequence number of the partition.
Path	Disk partition path
Status	When the user select a partition and click **Check selected partitions file system** button, the NVR will check the status of the selected partition and the **Status** will be updated, and the Check date will show the time of the last check.
Check date	The time for the last check
Size	Partition size in GB.
Used Size	Partition size used in GB.
Type	Format type
Label	Partition label: hydrarec: video disk hydralog: log disk
Mount path	Mount point for partition
UUID	Universally Unique Identifier
Refresh	Click the **Refresh** button to refresh the current partitions list.
Check selected partitions file system	This operation will require the device to restart immediately, and the user should confirm whether to continue the operation.

4 Front LED Indicators

There are 3 LEDs on the front of the device. Front panel of the eFT-S device with the glowing LEDs look as in the following:



No.	Name	Description
1	USB port	Connect to peripheral USB 2.0 storage device, mouse and so on.
2	POWER	The light is on when the power connection is OK.
3-4	HDD1/HDD2	The green light is flash when the device is recording, if the disks are not working, lights are always bright. The light is off without disk.

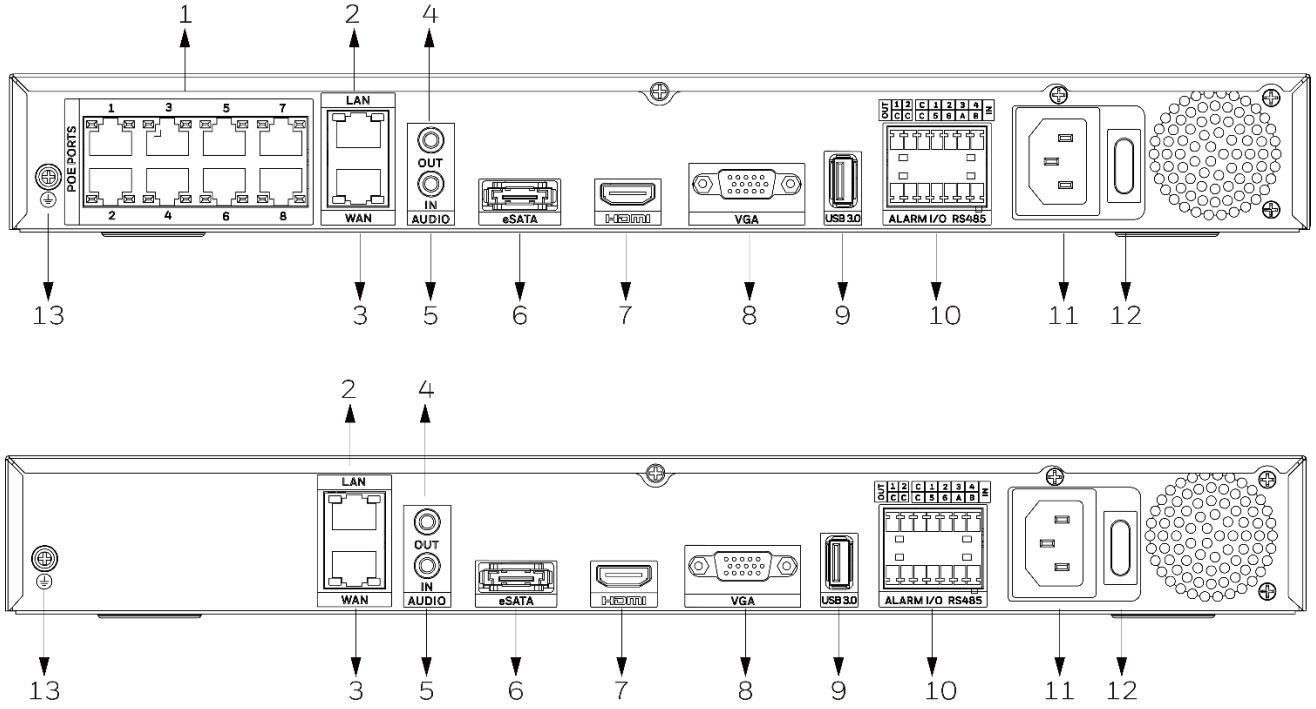
Caution!

When the 3 LEDs are flashing simultaneously, the system is servicing the recording disks (upgrading, formatting…). In that case, do not turn off power.

5 Motherboards

5.1 Connectors

Rear of the eFT-S PoE and Non-PoE devices have the following motherboard connectors:



No.	Name	Description
1	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.
2~3	Network port	10M/100Mbps self-adaptive Ethernet port. Connect to the network cable.
4	AUDIO OUT	Audio output port. It is to output the analog audio signal to the devices such as the sound box. Bidirectional talk output. Audio output on 1-window video monitor. Audio output on 1-window video playback.
5	AUDIO IN	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
6	eSATA	Hard disk port
7	HDMI	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
8	VGA	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
9	USB port	USB port. Connect to mouse, USB storage device and etc.
10	ALARM I/O	They receive signals from external alarm source. C is COM port. There is one channel of alarm in; There are eight channels of alarm out. When your alarm input device is using external power, make sure the device and the NVR have the same GND.

No.	Name	Description
11	Power input port	Power socket.
12	Power switch	Power on/off button.
13	⏚	GND

Motherboard connectors on PoE NVR:



Motherboard connectors on Non-PoE NVR:



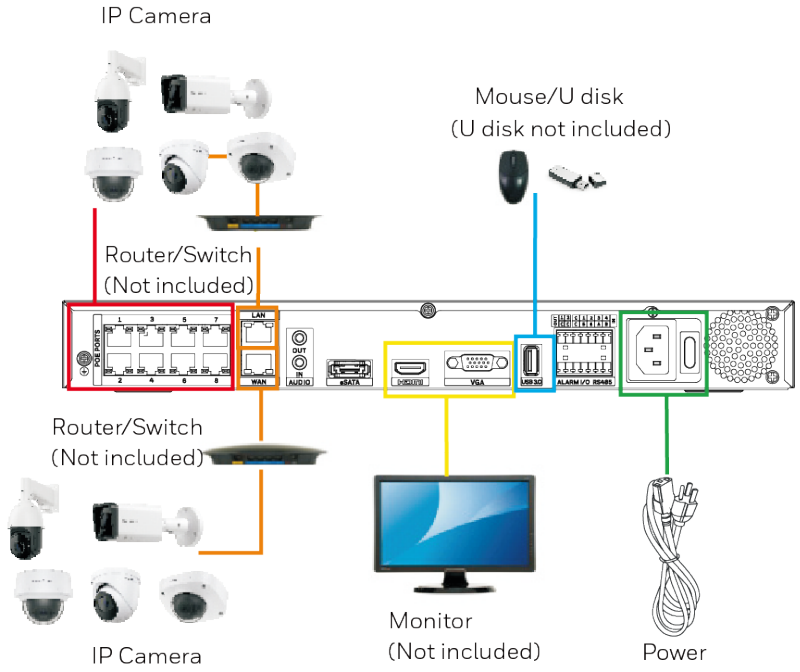
5.2 Replacing the Motherboard

Do not replace the motherboard in the field. If the motherboard needs replacing, send the device back to your supplier. Remember that the system licenses is linked to the motherboard. If you replace the motherboard, the system may not recognise the system license and will not be functional.

6 Connecting IP Cameras

An XO device that uses IP cameras requires separate IP network connections for:

- The network for communicating with the client PC, CMS, Net I/O units, S3100 panels… The primary Ethernet connector (WAN) on the motherboard provides the physical interface for this network.
- The network for the IP cameras. The secondary Ethernet connector (LAN) on the motherboard provides the physical interface for this network.
- The additional PoE connector on the motherboard provides the physical interface to connect to PoE cameras on the eFT-S devices.



Note

It is not possible to have overlapping IP address ranges in eth0 and eth1; these must be separate. With software version XO 4 and above, the system will check and issue a warning if the IP addresses of eth0 and eth1 are in the same range.

7 Network I/O Units (Net I/O)

The Network (Net) I/O units provide extra inputs and outputs for your XO device. You mount the units on a DIN rail and connect them to the local network. To power the units: use PoE, a PoE injector, or a local power adapter (12 VDC; min. 350 mA).

Each base unit offers 4 inputs and 4 outputs, and LED indicators and a buzzer controlled by the XO device. You can extend each base unit with 1 to 3 extension units, to obtain up to 16 inputs and outputs.
As you can link your XO device to up to 8 units (8 base units, each with up to 3 extension units), you can obtain a total of 128 extra inputs and 128 extra outputs.

The latest Net I/O units offer monitored inputs (requires V2 hardware and firmware, and min. firmware version XO 4.02 running on the controlling XO device. For details on monitored inputs, see the *ADPRO Network I/O Units Technical Manual* (33355).

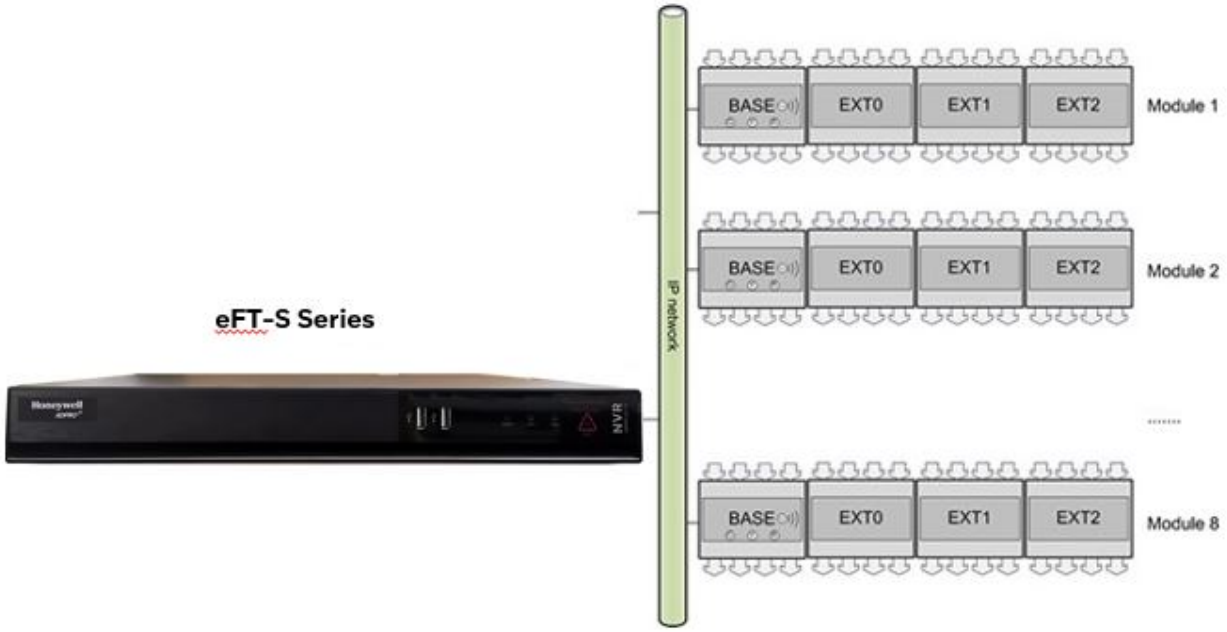
> ***Caution!***
>
> **Before plugging or unplugging any extension units, switch off the power to the base unit.**
>
> Plugging or unplugging extension units with power on may result in **permanent and irreparable damage** to the base and/or extension units.

Base unit:



Extension unit:





For detailed installation instructions, including programming the IP address and updating the software, see the *ADPRO Network I/O Units Technical Manual* (33355).
To configure the inputs and outputs, see the *XO Client Software User Manual* (21796).

8 Monitor

You can connect a monitor directly to the XO device, and use it for:

- Live viewing in a matrix view
- Consulting basic system information in the XO welcome screen

Note
The eFT-S device has one HDMI ports and one VGA port.

To set up live viewing on the monitor, see the *XO Client Software User Manual* (21796).

9 Audio

You can use not only video images on the XO device, but also audio – both in and out.

9.1 Audio IN

Audio input is available from the cameras' audio inputs, or from IP audio devices such as the Axis horn speaker.

You can choose to record audio, and listen to audio in the live view. For an overview of IP cameras that support audio in, see the *Supported IP Camera List* (26742). Usage of IP audio modules is similar to IP cameras with audio in capabilities. For details, see *Using IP Audio Devices* on page 49.

Note

- If the connection bandwidth is low, it is recommended to disable live audio streaming.
- Audio IN is unbalanced audio.
- Changing the audio settings requires a system restart.

In the XO client, you have to enable the audio inputs for recording and listening in the live view. For more information, see the *XO Client Software User Manual* (21796).

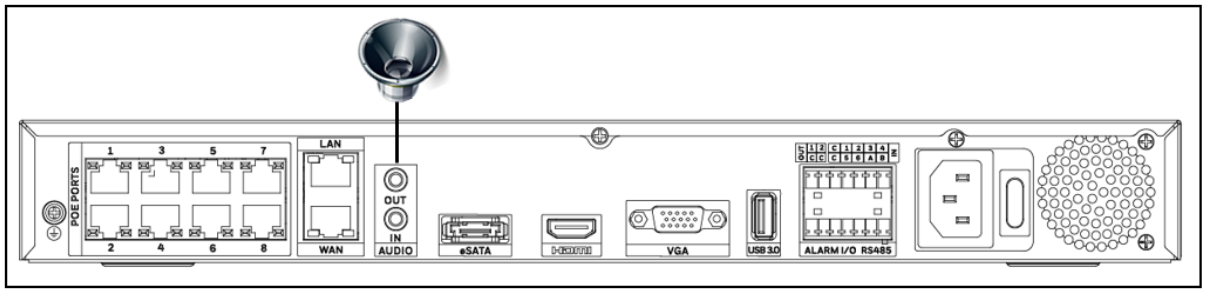
9.2 Audio OUT (Talkback)

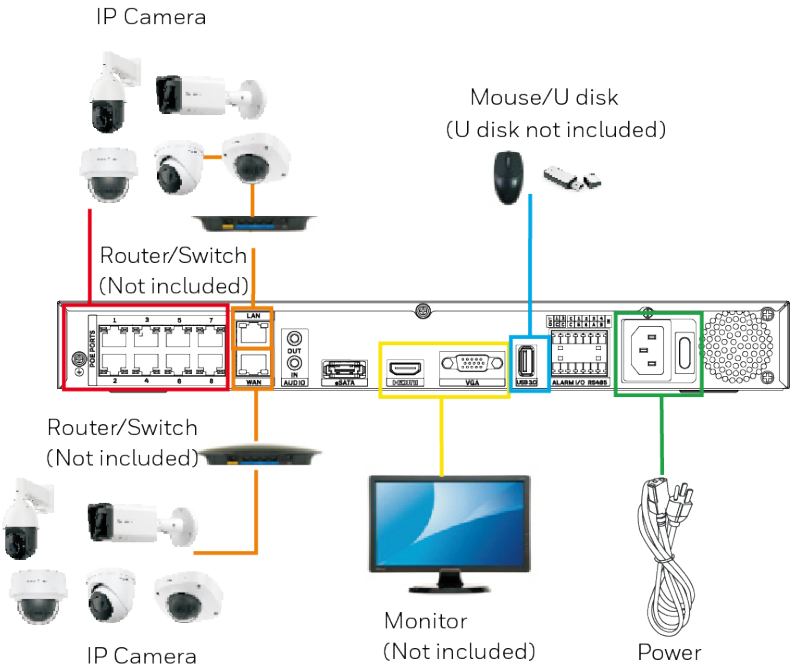
9.2.1 Options

Talkback to the site works via the **Live Video** window in the XO client software. You select a camera, and then use the microphone (typically connected to the client PC) to talk to the site via the speaker that is associated with that camera.

If you need **only one speaker** on your site, you have the following options:

- Connect an amplified loudspeaker to the audio out plug of the motherboard (= green 3.5 mm jack).





Audio zoning is not supported in eFT-S Series devices.

- For more information, see the *Supported IP Camera List* (26742).

9.2.2 Troubleshooting Talkback

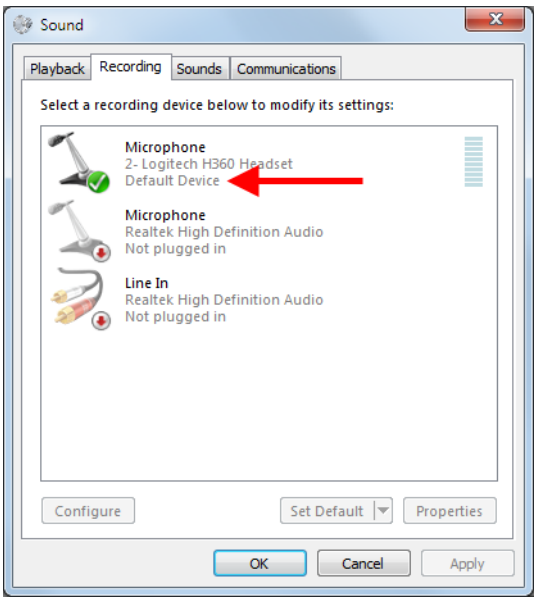
You can test talkback using the XO client. The audio out setup screen provides a test button to play a sound clip. For details, see the *XO Client Software User Manual* (21796).

If talkback does not work, check the following:

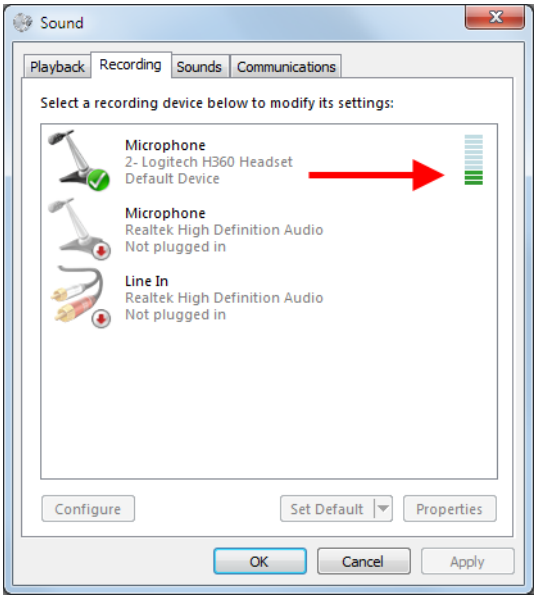
- In the XO client software, check the access rights of the user: **Audio talk** must be allowed.
- Routers may block UDP packets. In the audio setup in the XO client, specify TCP, or configure the router to allow UDP packets.
- Use the PC headphones plug instead of the PC microphone plug.
- Check the configuration of the microphone on your computer. For details, see below.

To configure the microphone on your computer in Windows 7, proceed as follows:

1. Click **Start**, and then click **Control Panel**.
2. Click **Sound**, and then click the **Recording** tab.
3. If you have more than one sound device, check if the device you want to use with the XO device is the default device. If not, right-click the desired device, and click **Set as Default Device**.



4. To test if the microphone works, tap it with your finger a few times. The blue lines next to the default microphone light up in green, indicating the volume.



5. Click **OK**, and close **Control Panel**.

9.3 Using IP Audio Devices

There are several IP audio devices that you can use for audio in/out, such as the Axis Network Horn Speaker (C3003-E) and the Axis P8221 I/O Audio Module. For details on the supported features of the IP audio devices, see the *Supported IP Camera List* (26742).

You manage an IP audio device on the XO device as if it were an IP camera with audio in and audio out capabilities:

- You connect the IP audio device to the IP camera network, and enable it in the XO client as an IP camera. The audio device occupies one IP channel. As there is no video from the device, the system will display a speaker icon in the live/recorded video windows.
- You enable audio in and audio out just like for an IP camera.

- You select it for talkback in the **Live Video** window just like a camera with audio out.
- You can set up recording for the device. When you play back the recording, the system will display a speaker icon instead of video, but you will hear the recorded sound (audio in from the built-in microphone and audio out from talkback).

10 Connecting PIR Detectors

10.1 Required PIR Firmware

All PIR firmware versions work with RS-485 communication, but some old PIR firmware versions may not support features such as alarm management.

10.2 Connecting PIR Detectors

To connect PIR detectors to the XO device, you have the following options:

Connection method	Max. no. of PIR detectors
RS-485 cable connected directly to the MIO card of the XO device	32 on the RS-485 bus
Via a USB-to-RS-485 8-channel distribution unit, connected to a USB port on the XO device	32 on the RS-485 bus
Via a USB-to-serial-port RS-485 converter, connected to a USB port on the XO device	32 on the RS-485 bus
Via the IFM-485-ST interface module, connected to a USB port on the XO device	32 on the RS-485 bus
Via IP modules, connecting the PIR detectors via the local network to the XO device (no RS-485 bus required)	34; with firmware version XOa 3.02.0001 or above

You can connect maximum 32 PIR detectors on an RS-485 bus. However, you can combine an RS-485 bus and IP modules to connect more PIR detectors to the XO device.
The maximum number of PIR detectors on an XO device is 34 (requires minimum firmware version XOa 3.02.0001).
The XO client will indicate how each PIR detector is connected: over RS-485 (**SER**) or over IP (**ETH**).

You can connect a PIR detector to only one XO device.

Note

You need a PIR-HLI application license to enable the PIR detectors. Use Xchange to install the license on the XO device. For more information, see the *Xchange Tool User Manual* (27816).

10.3 PIR Address Range

Regardless of the connection method, PIR detector addresses must be in the following ranges:

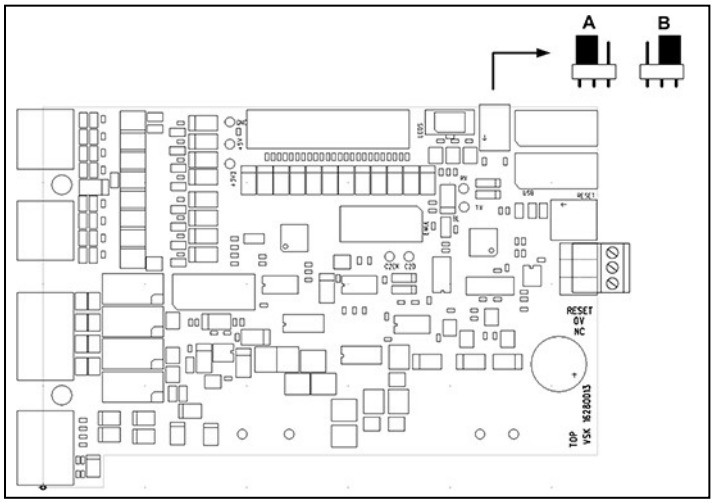
- Firmware version XOa 3.02.0001 and above: 1–34. The XO device will not discover PIR detectors with addresses above 34.
- Firmware versions below XOa 3.02.0001: 1–32. The XO device will not discover PIR detectors with addresses above 32.

Furthermore, each PIR detector must have a unique address, regardless of the connection method (RS-485 or IP). For instructions on setting PIR detector addresses, see the *ADPRO PRO E PIR System Setup Manual* (26571).

10.4 Direct Connection to the MIO Card

Connect the PIR detector(s) to the XO device by connecting the RS-485 cable of the PIR closest to the XO device to the MIO card of the XO device. You can connect up to 32 PIR detectors in cascade on the RS-485 bus.

On the internal MIO card, set the RS-485 jumper to the 2-wire position (**A**).

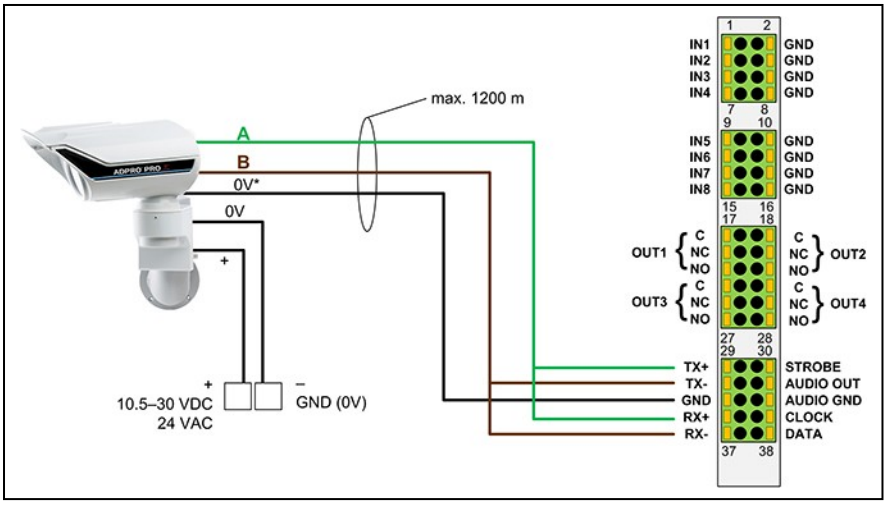


MIO card Next Generation	
A	RS-485 PTZ jumper: 2-wire setting (default setting – see Note below)
B	RS-485 PTZ jumper: 4-wire setting

Note

On systems produced from the end of April 2015, the default setting of the RS-485 PTZ jumper is 2-wire. On older systems, the 4-wire setting was default. If you experience any problems when connecting devices to the MIO card, check the RS-485 PTZ jumper setting. Change it if necessary.

Connect the wires as shown below:



(*) Some PIR models have separate 0V terminals for data and power; on other models there is only one common 0V terminal.

Make sure to bridge the following connections:

- TX+ with RX+
- TX– with RX–

The PIR detectors are powered locally by a power adapter.
You can place locally powered PIR detectors at the maximum distance of 1200 m for RS-485 cables. Make sure that there is no difference in earth potential between the XO device and the PIR detector.

10.5 Connection via the USB-to-RS-485 8-Channel Distribution Unit

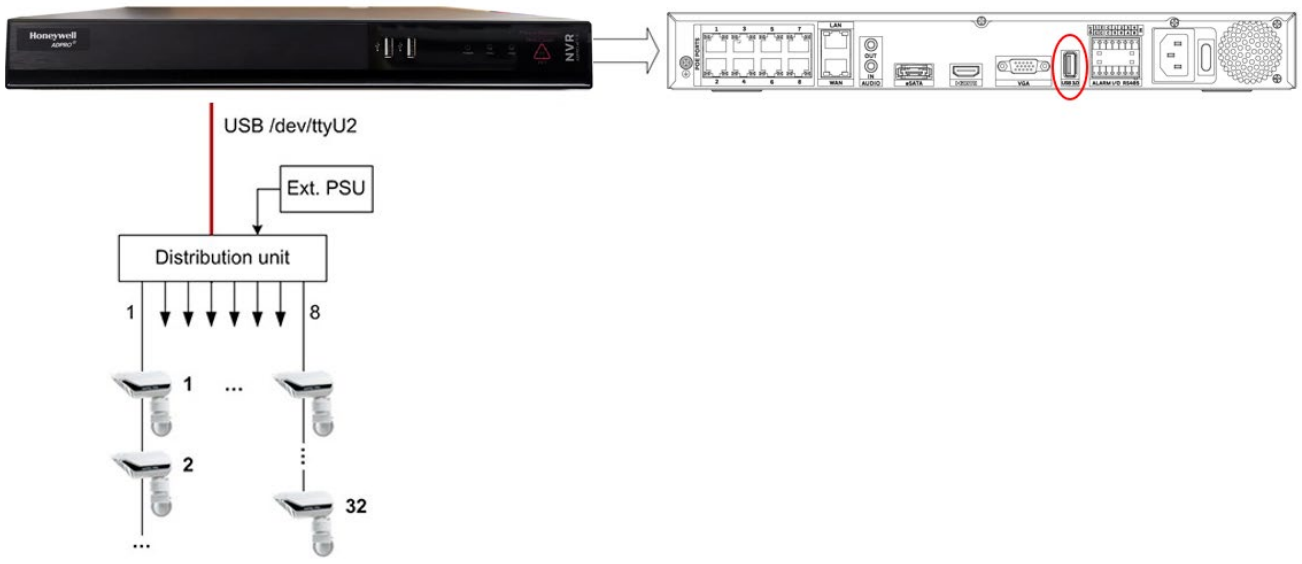
The USB-to-RS-485 distribution unit provides 8 channels to easily connect and configure the PIR detectors on the XO device.

Each PIR detector needs a unique address. For the appropriate address ranges, see *PIR Address Range* on page 50. You can use the unit, together with the ADPRO PIR software on your PC, to assign a unique address to the PIR detector. In this case, connect the distribution unit to your PC, and connect only 1 PIR detector per channel on the distribution unit. For details, see datasheet *USB-RS-485 distribution unit* (19532060).

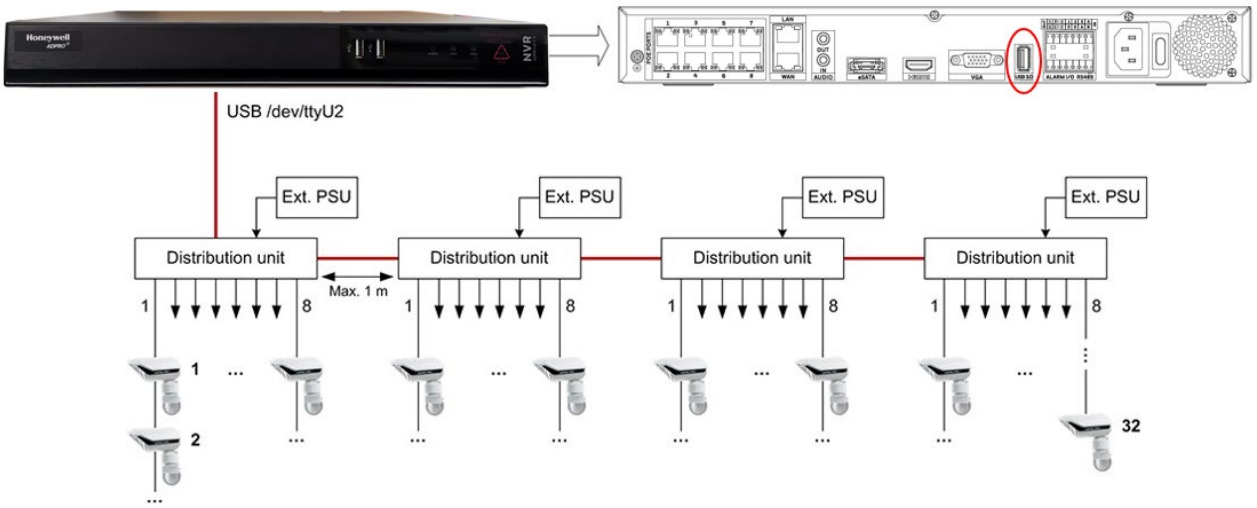
Once you have assigned unique addresses to the PIR detectors, you can connect multiple PIR detectors to the same channel on the distribution unit, allowing you to connect 32 PIR detectors to an XO device using only 1 distribution unit. Depending on the existing installation (see the restrictions on distances and cable lengths further below), you can determine which PIR detectors you connect to which channel. If necessary, you can connect up to 4 distribution units in cascade. In that case, you connect only one of the 4 distribution units directly to the XO device.

Keep the following in mind:

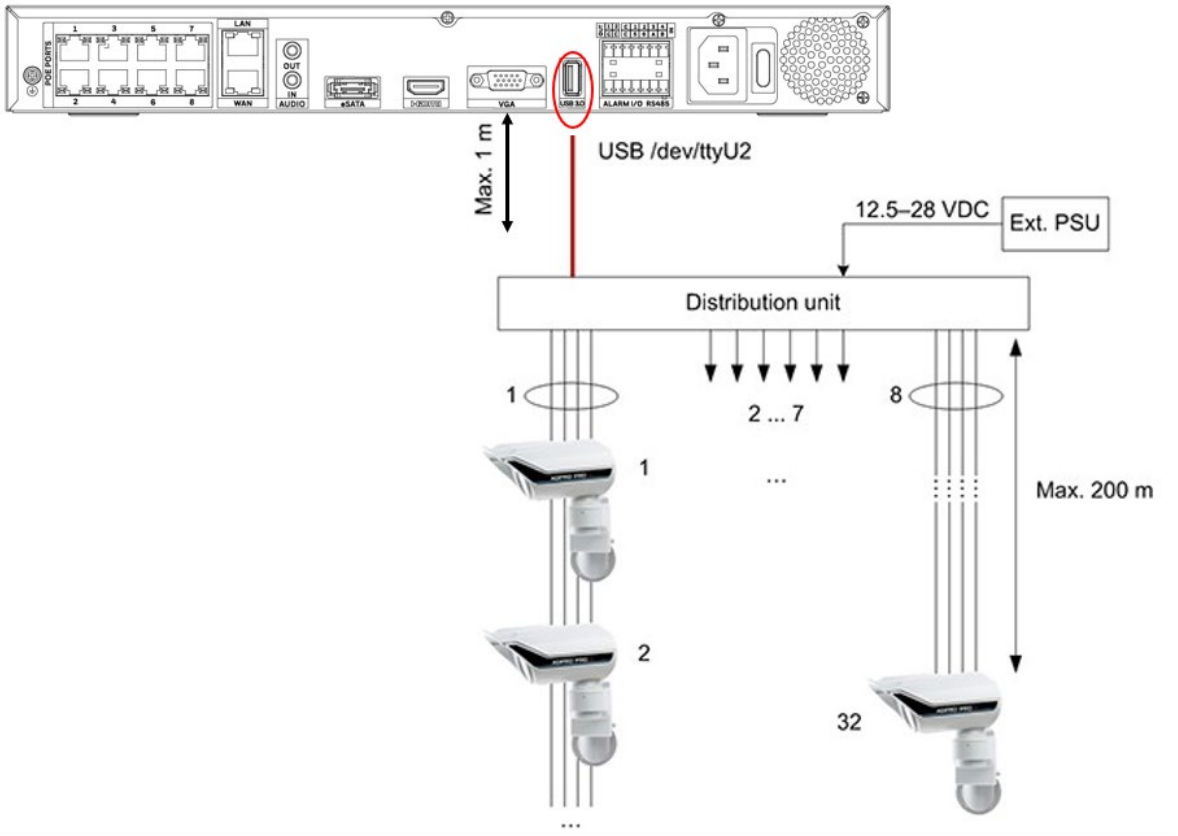
- Before connecting multiple PIR detectors to the same channel, you have to assign a **unique address** to each PIR detector.
- Connect the distribution unit to the **/dev/ttyU2** USB port on the XO device. Do not use any other ports.
- Restart the XO software after connecting the PIR detectors to the USB port.
- Only the 485 bidirectional communication of the PIR detectors is used, not the mechanical PIR tampers.
- The **maximum distance** between distribution unit and PIR detector is 200 m. If the distance is longer than 200 m, then the PIR detector needs a separate local power supply.
- With local power supplies, the **maximum distance** between distribution unit and PIR detector is 1200 m.
- The **maximum length** of the USB cable between the distribution unit and the XO device is 1 m.
- If you use several distribution units in cascade, the **maximum length** of the cables between the units is 1 m.



An example of distribution units in cascade:



A detailed view of a connected distribution unit:



The maximum length of the USB cable between the XO

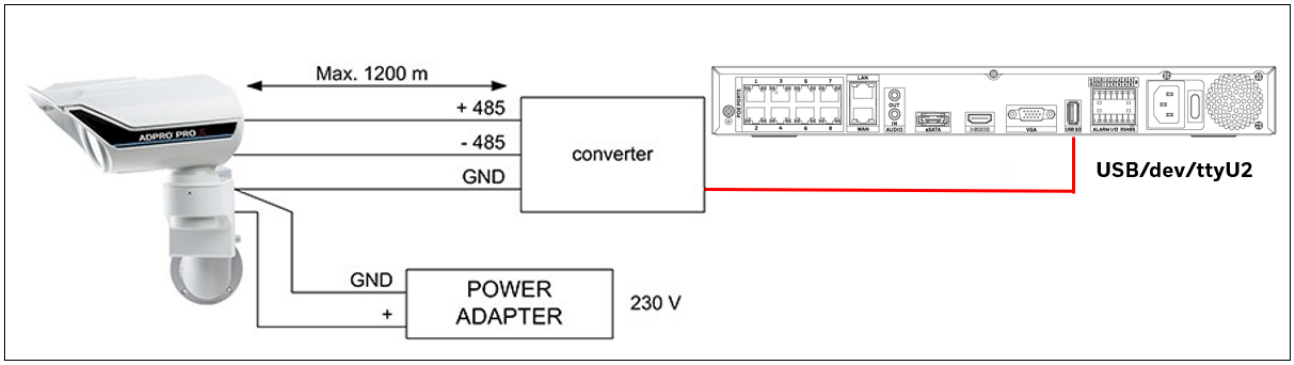
device and the distribution unit is 1 m.

Four wires connect the PIR detector to the distribution unit (power supply and communication).

The maximum distance between distribution unit and PIR detector is 200 m. If the distance is longer than 200 m, then the PIR detector needs a separate local power supply.

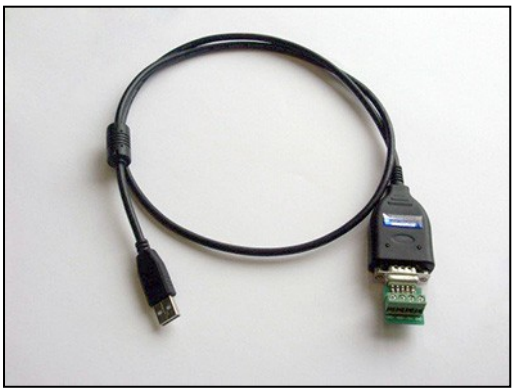
10.6 Connection via the USB-to-Serial-Port RS-485 Converter

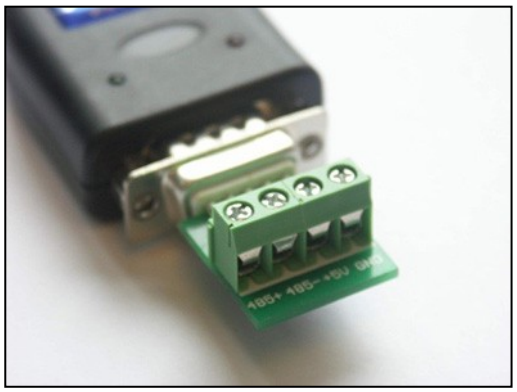
Connect the PIR detector to the converter and plug the USB cable of the converter in the /dev/ttyU2 USB port of the XO device.
Restart the XO client software after connecting the PIR detectors to the USB port.



You can place locally powered PIR detectors at a maximum distance of 1200 m with RS-485 cables. Make sure that there is no difference in earth potential between the XO device and the PIR detector.

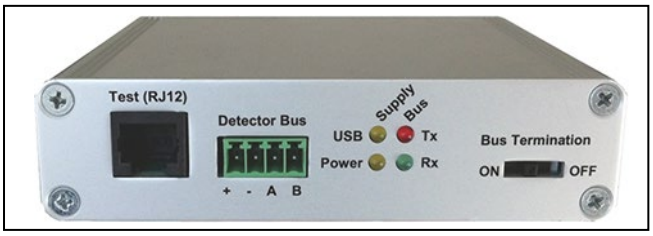
You need to order the USB to serial port RS-485 converter separately (reference number 20415490).





10.7 Connection via the IFM-485-ST Interface Module

The IFM-485-ST is an interface module which allows to conveniently connect the RS-485 bus of the PIR detector to the /dev/ttyU2 USB port of your XO device.



For detailed installation instructions, see the *ADPRO IFM-485-ST Legal Disclaimer & Intended Use of Product* (27178), and the *ADPRO PRO E PIR System Setup Manual* (26571).

10.8 Connection via IP Modules (PRO E-IPM)

10.8.1 Summary

IP modules allow you to connect PIR detectors via the local network, instead of via an RS-485 bus. The modules convert the signals from network to RS-485. They are powered via PoE.

You need to set up the IP modules so that they can communicate with the XO device: assign an IP address, and specify the correct communication settings. For this, you will use the Lantronix DeviceInstaller program. Honeywell recommends to use IP addresses in the same range as the local network of the XO device (eth0; not in eth1 which is the range of the IP camera network).

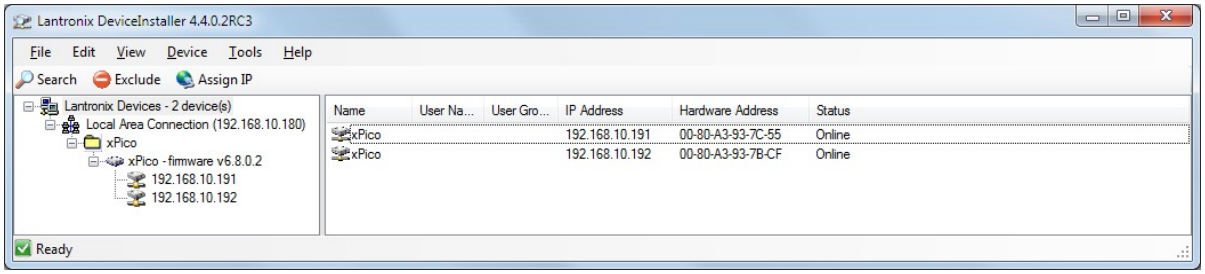
After the configuration, you can connect the IP modules to the PIR detectors, and finally add the IP modules to the XO client.

10.8.2 Setting up the IP Modules

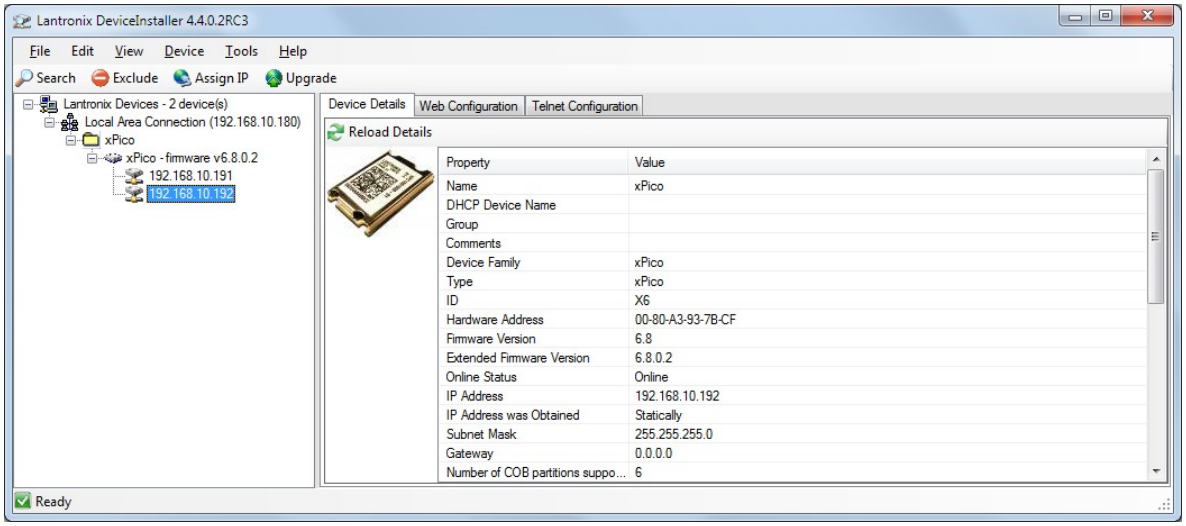
The IP modules only work with the XO client software if they have a static IP address and use the UDP communication protocol. Furthermore, you must set up the serial ports of the IP modules.

To set up the IP modules, proceed as follows:

1. Connect the IP modules to the network, and make sure that your PC is in the same network.
2. Download and install the Lantronix DeviceInstaller program (available from www.lantronix.com/products/deviceinstaller).
3. Launch DeviceInstaller. It automatically starts searching for the IP modules (xPico devices) on the network. If the search does not start automatically, click **Search**.



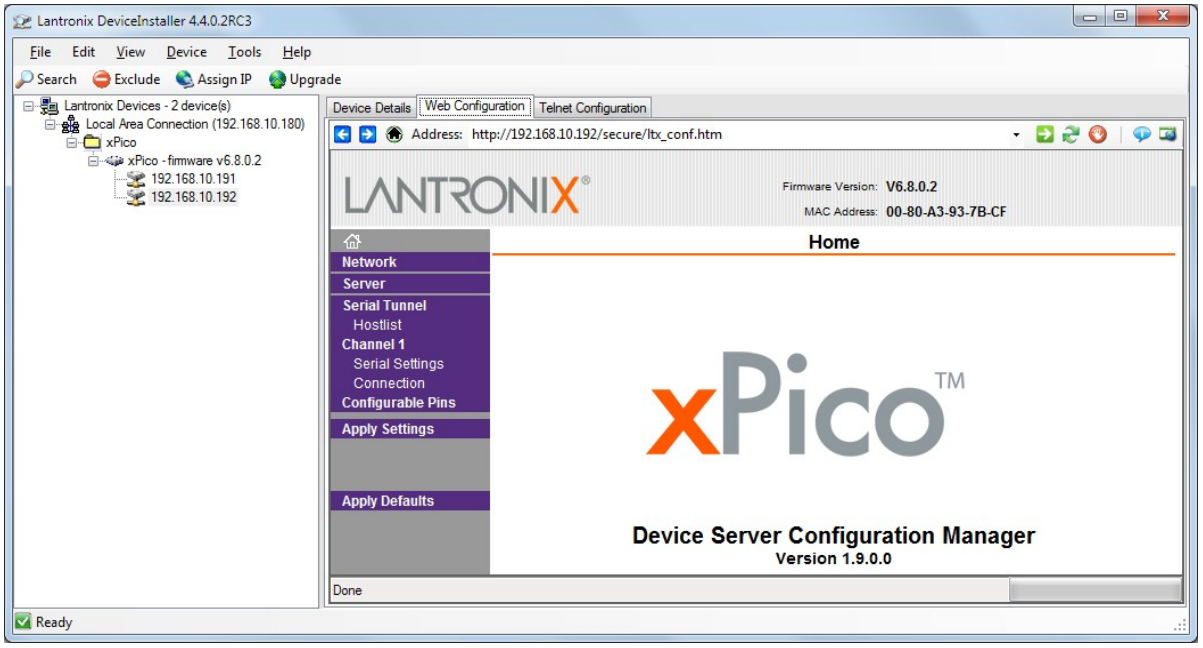
4. To configure a module, double-click it in the list.



5. Click the **Web Configuration** tab, and then click the  button to connect to the module.

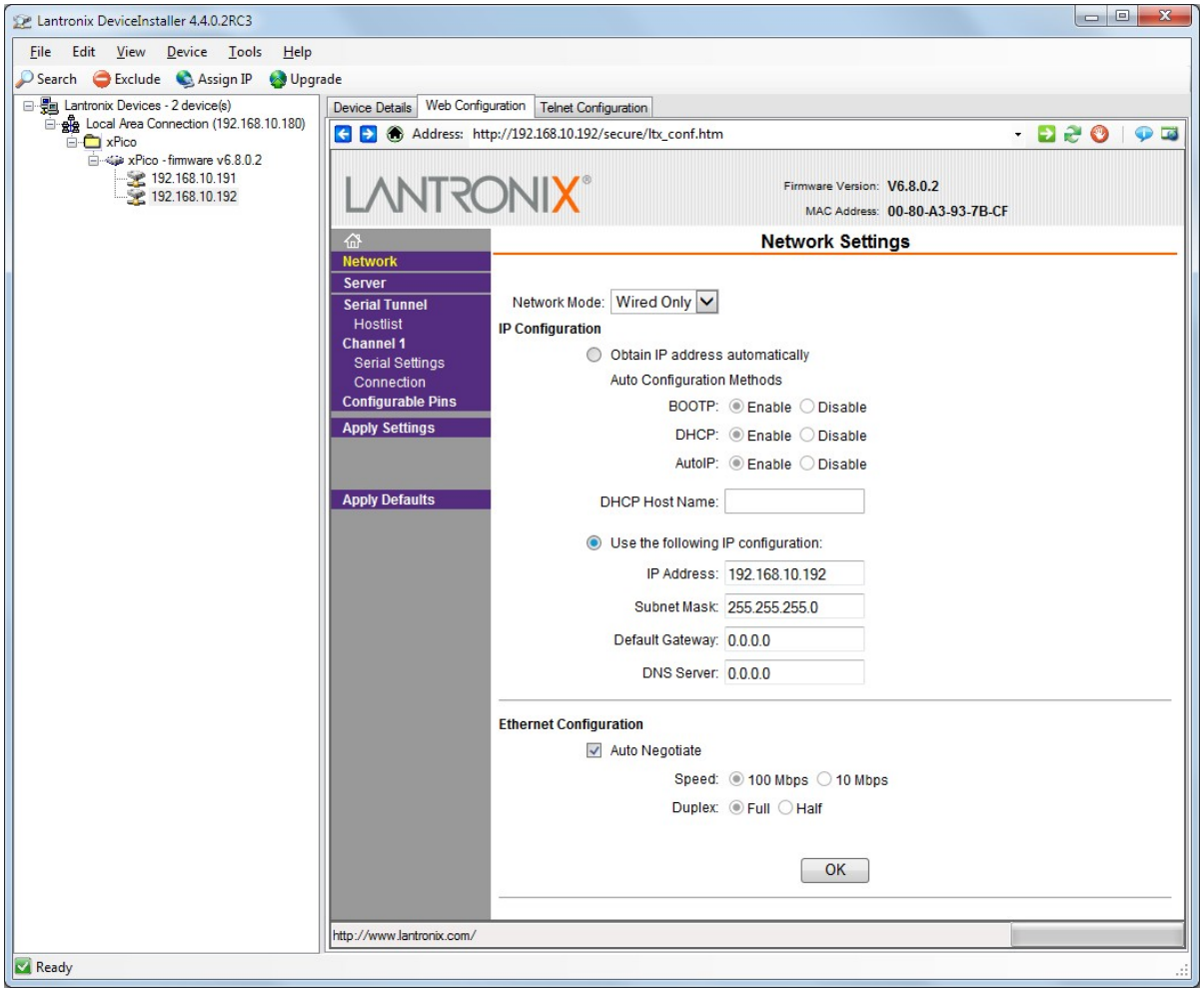


6. Leave the username and password blank; just click **OK** to continue.



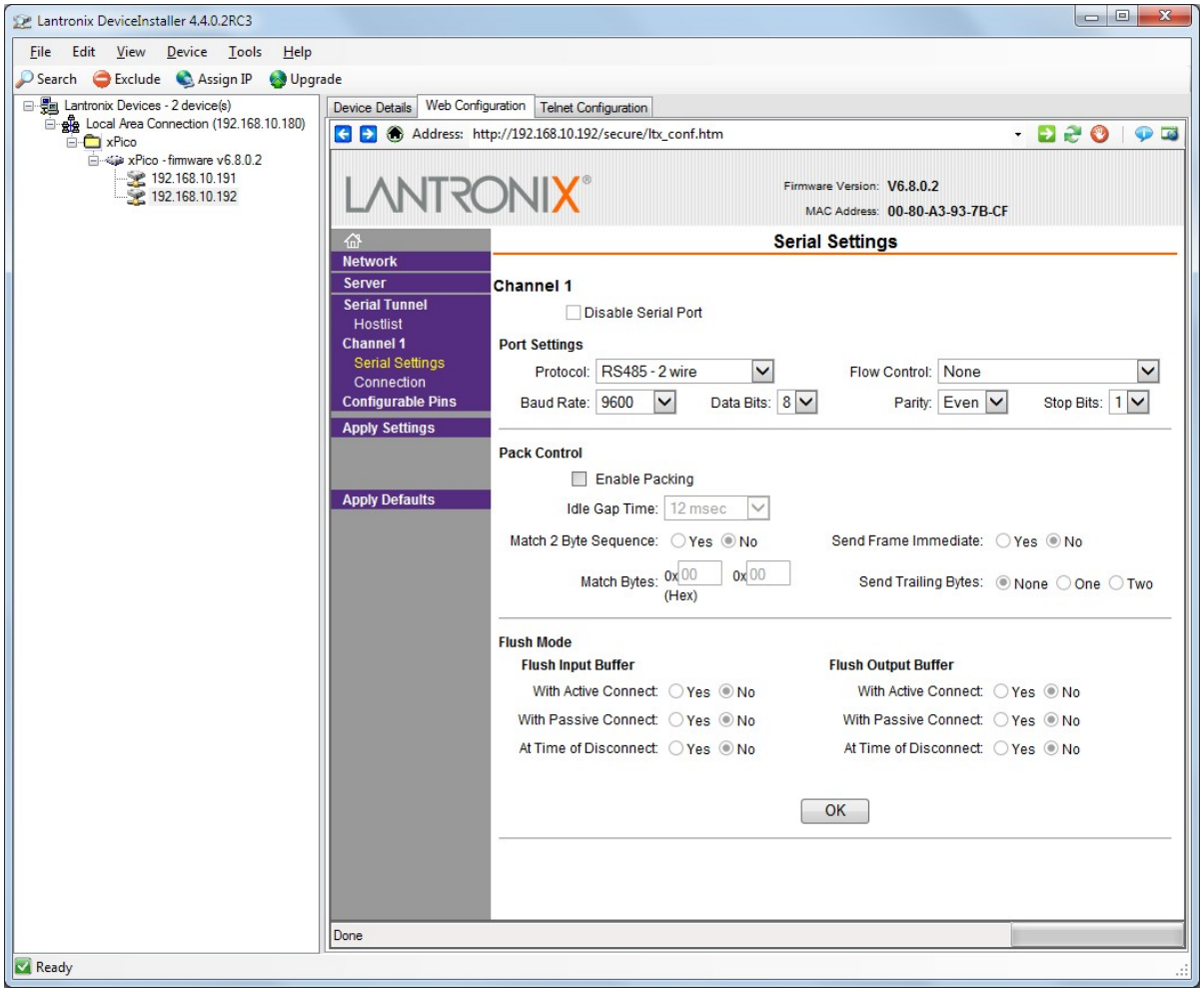
Next, you will make sure that the module uses a static IP address.

7. Click **Network**, and provide the correct network settings. The example screen above shows the settings for an IP module with IP address 192.168.10.192. Honeywell recommends to use IP addresses in the same range as the local network of the XO device (eth0; not in eth1 which is the range of the IP camera network).



8. Click **OK** to save the settings.
   Next, you will set up the serial port communication.

9. Click **Serial Settings**, and set the parameters as shown in the screen below.

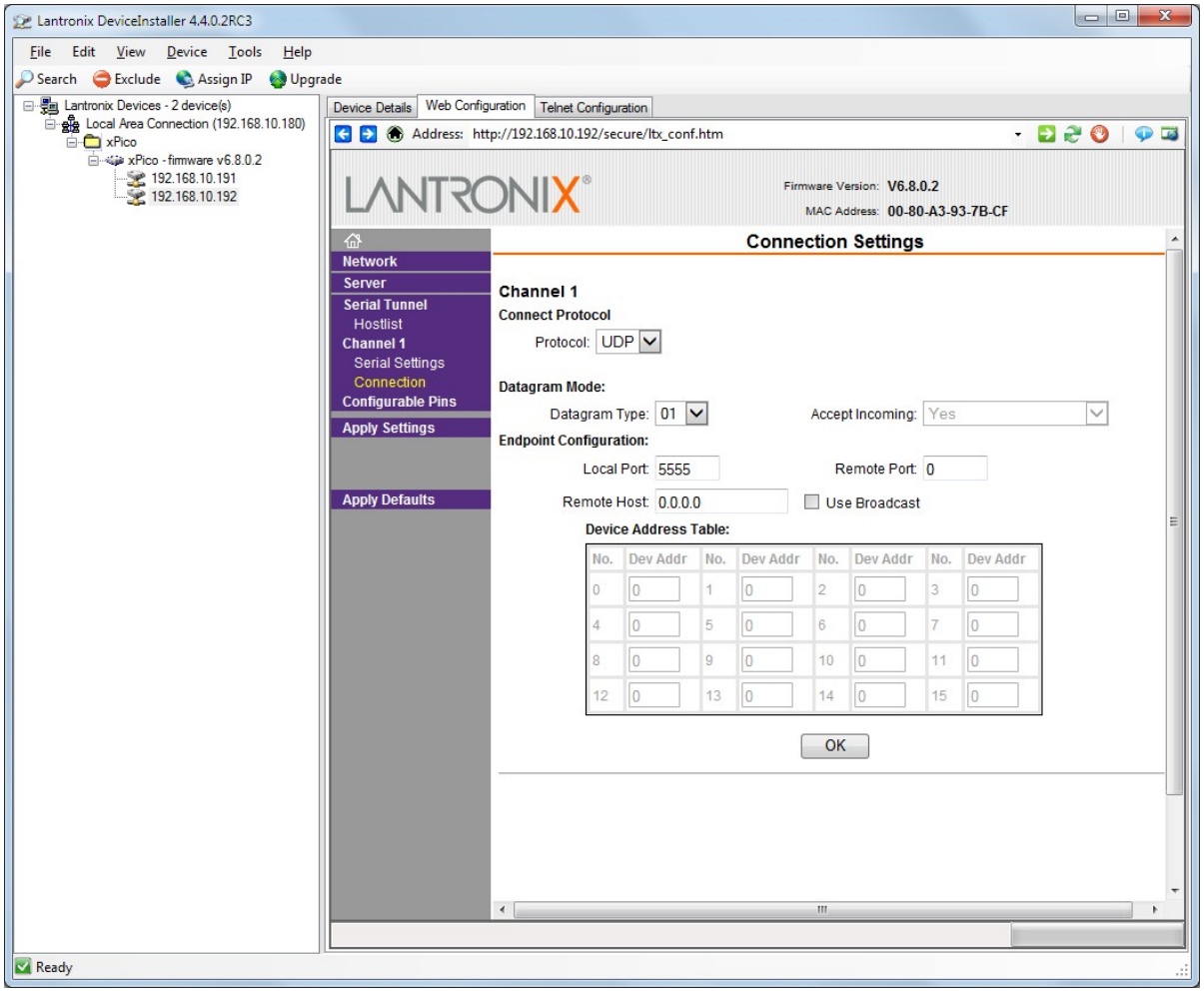


Make sure that the **Port Settings** are as follows:

Item	Description
Protocol	RS485 - 2 wire
Flow control	None
Baud rate	9600
Data Bits	8
Parity	Even
Stop Bits	1

10. Click **OK** to save the settings.
Next, you will set up the module to use UDP communication.

11. Click **Connection**, and set the parameters as shown in the screen below:

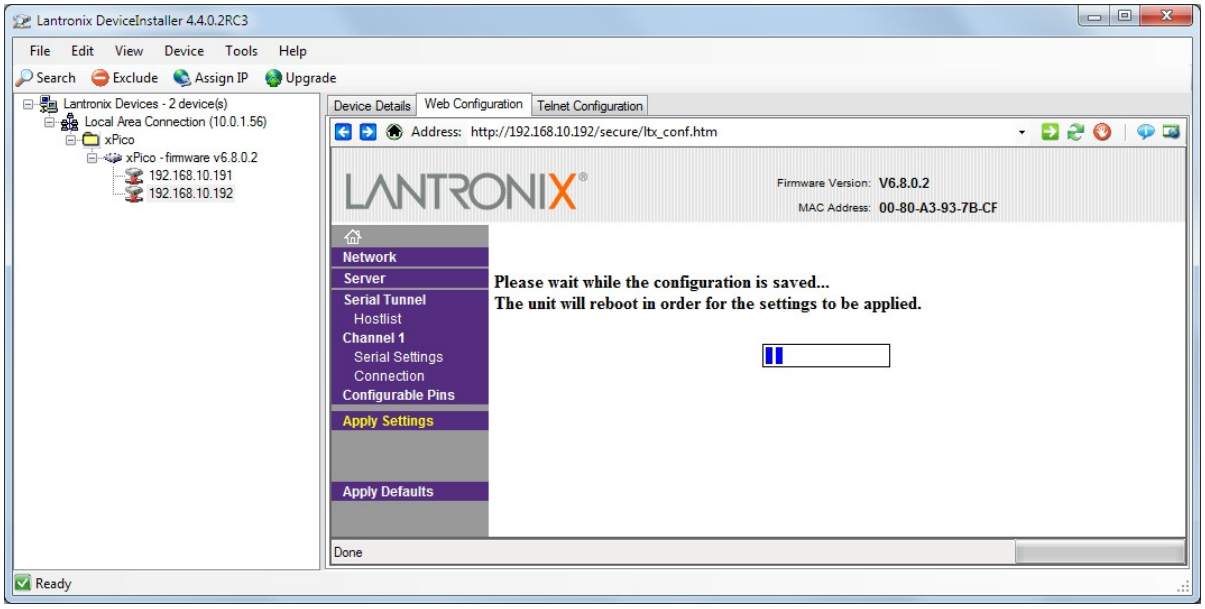


Make sure to set the following parameters correctly:

Item	Description
Protocol	UDP
Datagram Type	01
Local Port	5555

12. Click **OK** to save the settings.
Next, you will apply all the settings to the module.

13. Click **Apply Settings**.



The module will restart, and will then become available with the new IP settings. You can change the IP address in the address bar, or you can use the search function as before.

14. Repeat steps 4 to 13 for other IP modules.

Now you can connect the IP modules to the PIR detectors.

10.8.3 Connecting the IP Modules to the PIR Detectors

For details on connecting the IP modules to the PIR detectors, see the document *ADPRO PRO E-IPM Legal Disclaimer & Intended Use of Product* (27556).

Take into account that the wire colours may be different:

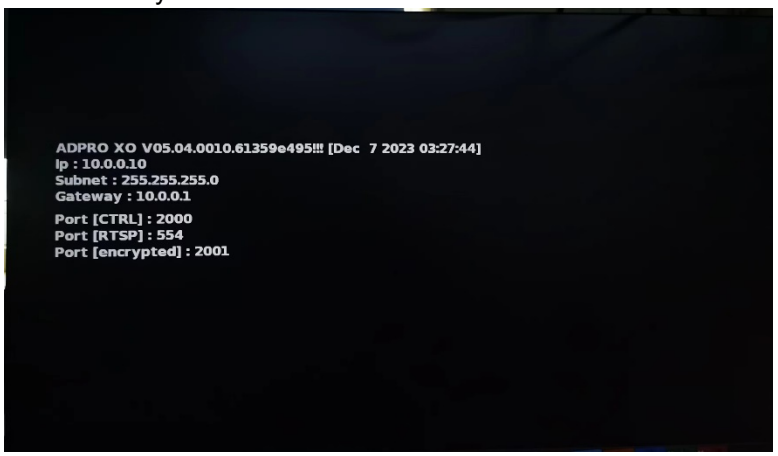
A	Blue	Red
B	Black	Orange
+	Brown	Yellow
GND	Red	Green

After connecting the IP modules to the PIR detectors, you can add the IP modules in the XO client. For details, see the *XO Client Software User Manual* (21796).

11 Retrieving the IP Address

The XO client displays the XO device's IP address in the title bar. However, if you cannot connect to the XO device, you can find the IP address as follows:

You can easily switch between the matrix view and the welcome screen by enabling or disabling the monitor:



The welcome screen displays the following information:

1. XO device (server) software version
2. IP address, subnet mask, and gateway
3. control, RTSP and encrypted port numbers.

12 Maintenance

The eFT-S Series devices require almost no maintenance.

Keep the device dust-free.



Caution!

Do NOT clean the device with water or any corrosive products. Use only dust cloths and wipes to clean the outside.

13 Full Reset by Flashing the DOM

13.1 Flashing the Image File to the DoM

The following is the procedure to flash an eFT-S Series device:

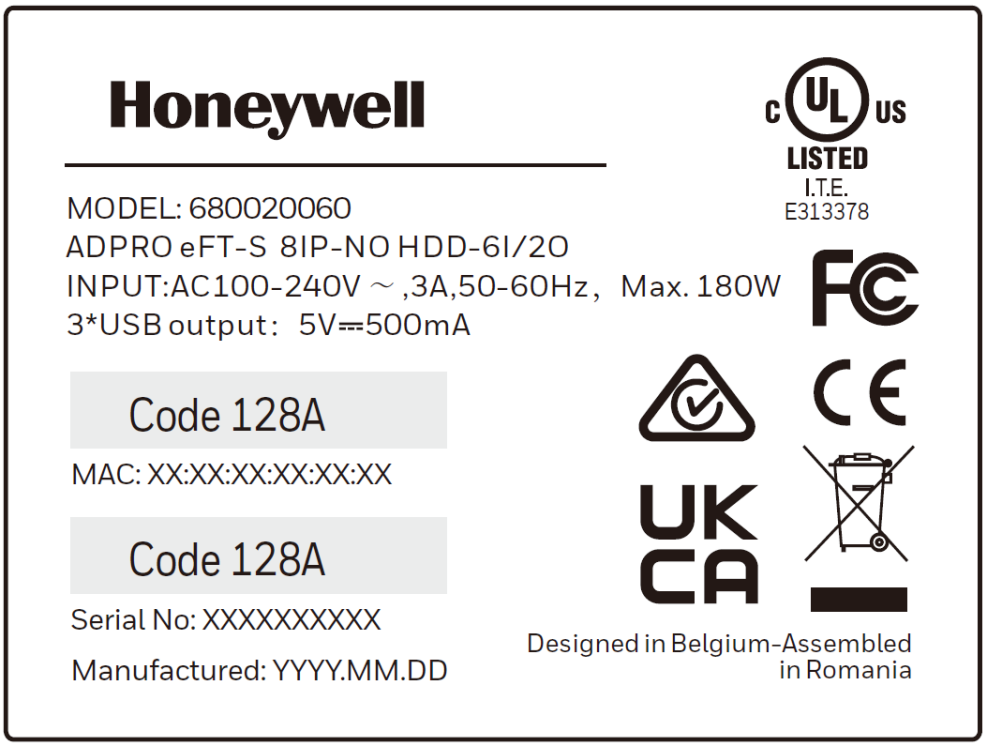
1. Copy the firmware file to a USB stick with fat32 format.
2. Insert the USB stick to the eFT-S Series device.
3. Power off and then power on the eFT-S Series device.
4. Wait for about 2 minutes to finish the upgrade. Or the customer can connect a monitor to display the upgrade progress.

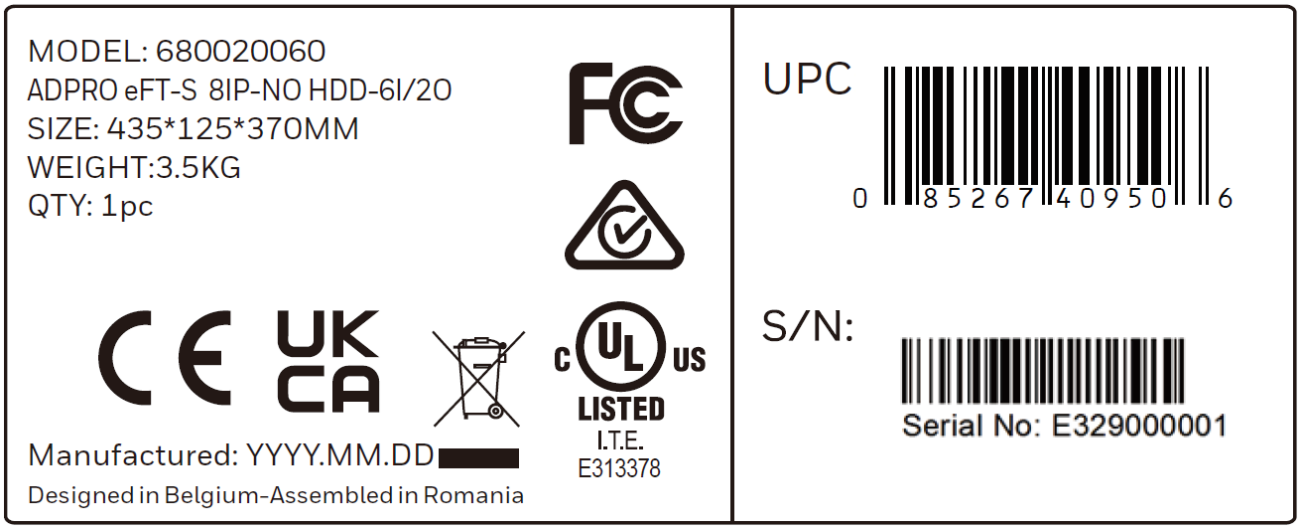
14 Product Labelling

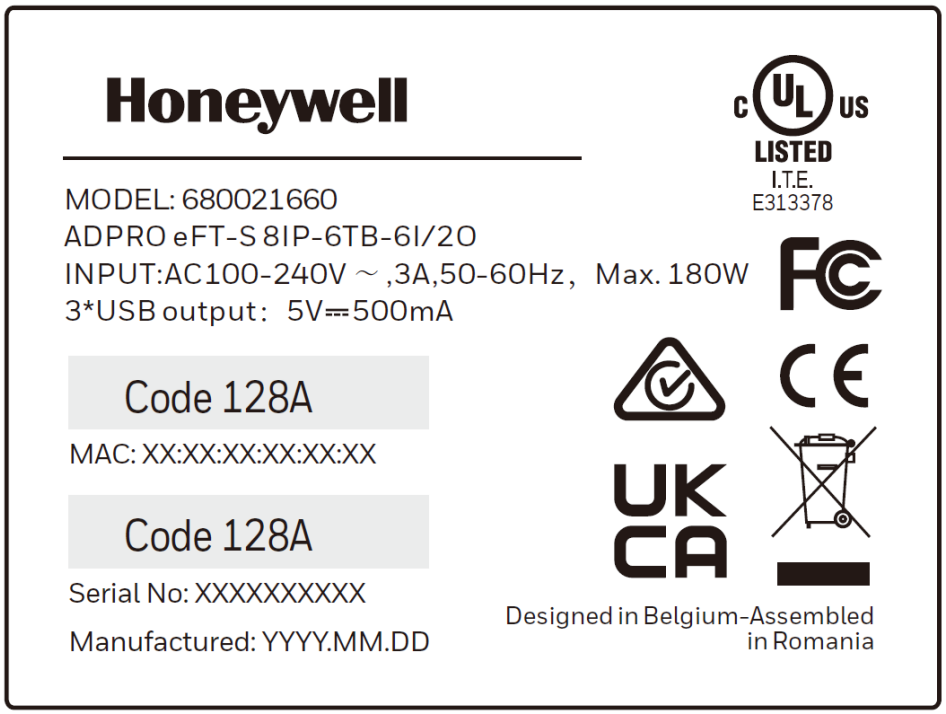
14.1 Labels

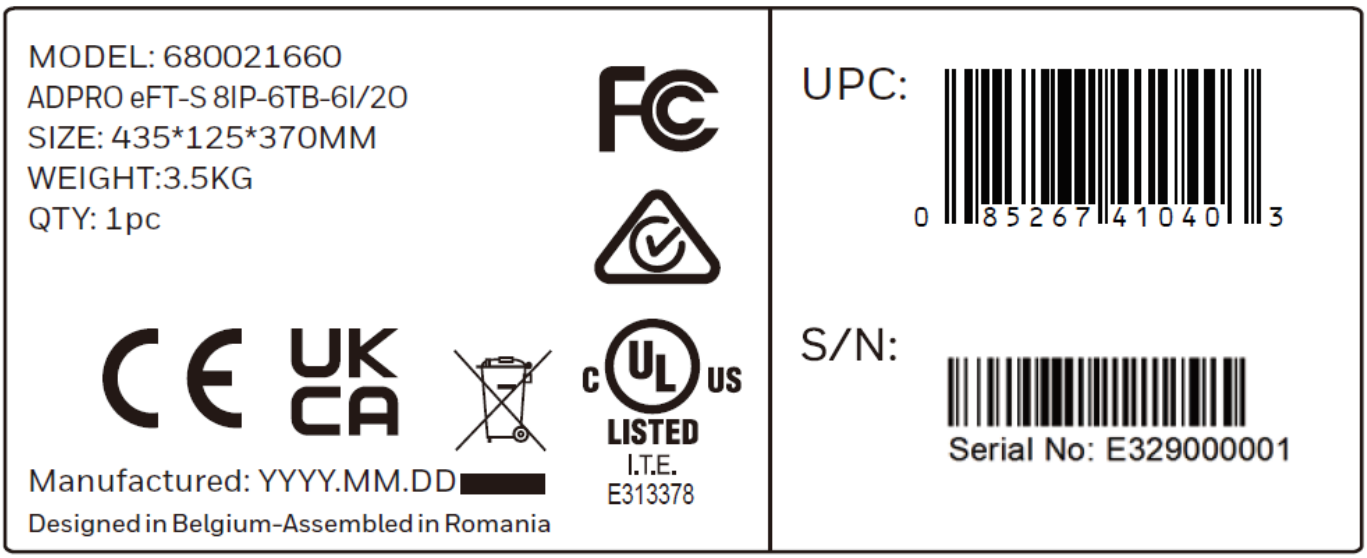
All ADPRO products are labelled. The label contains the following information:

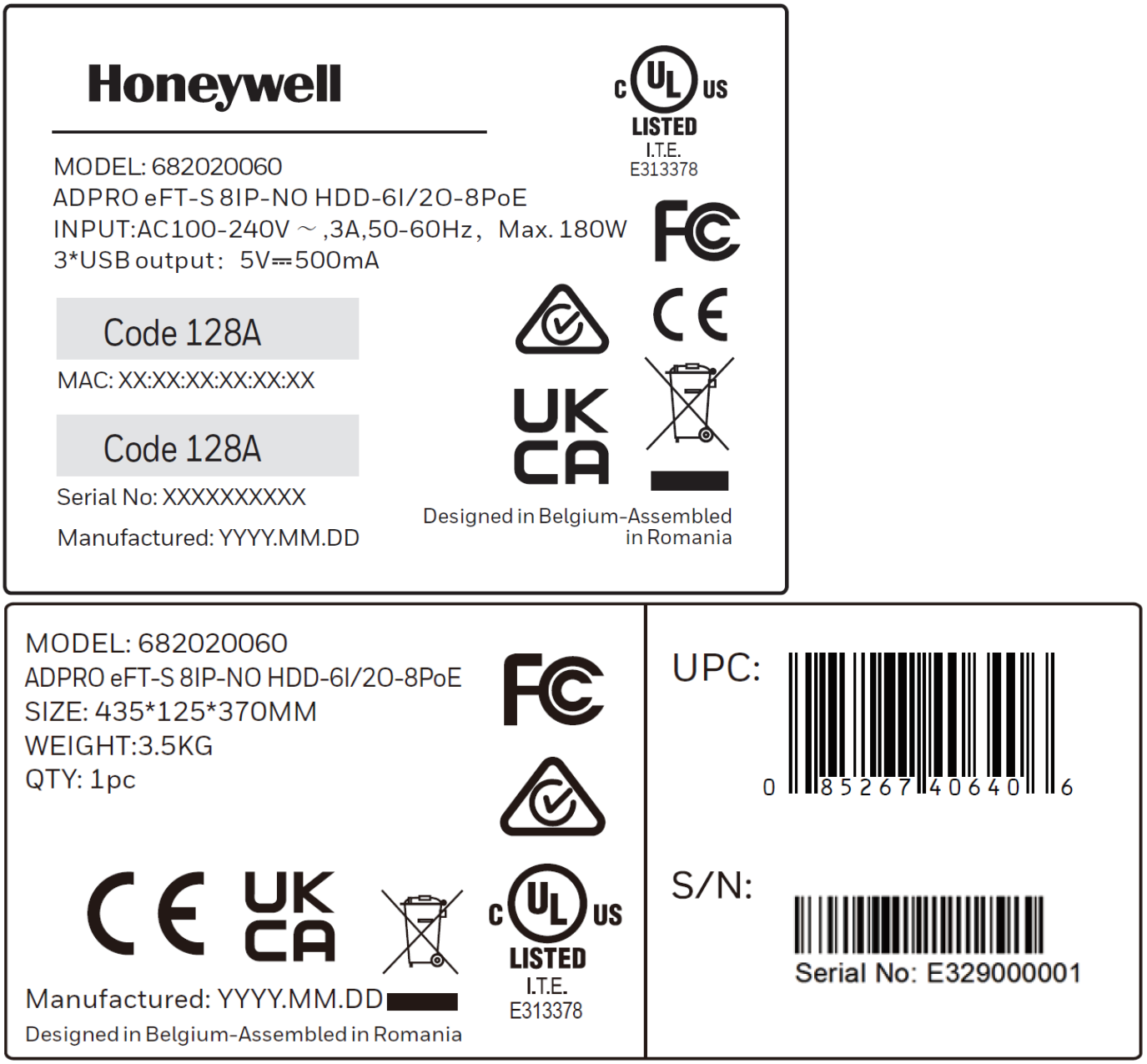
- The ADPRO device model name.
- Voltage and current specifications.
- Product number and serial number.

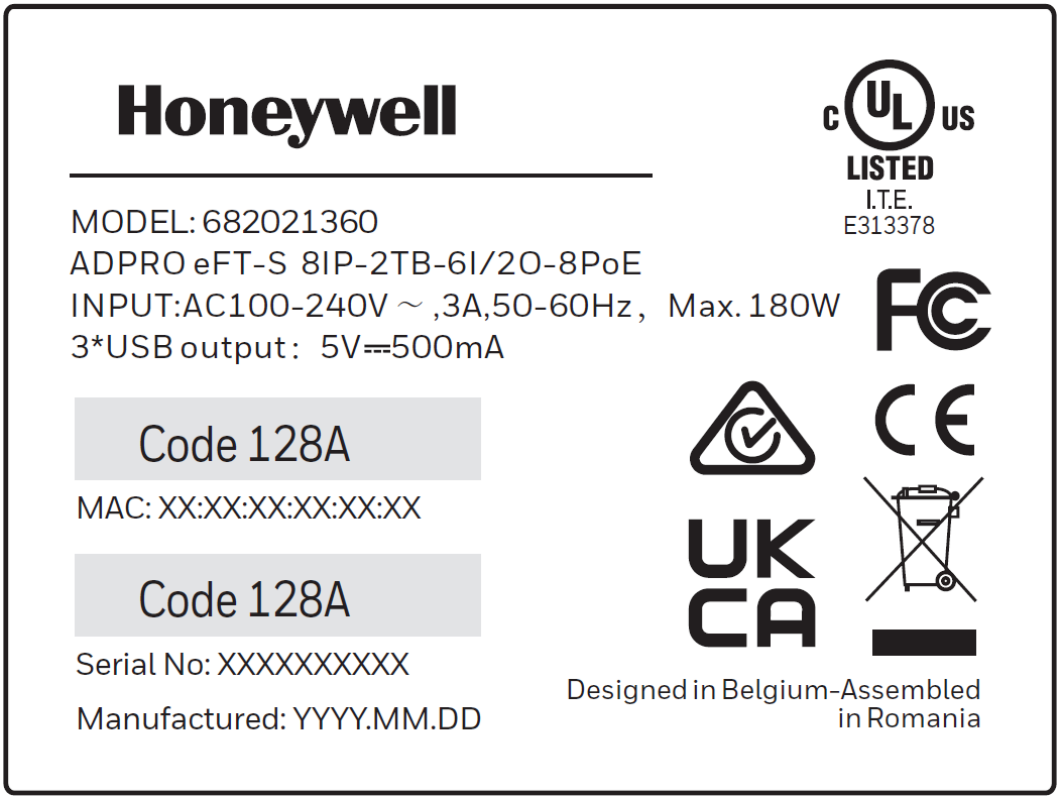


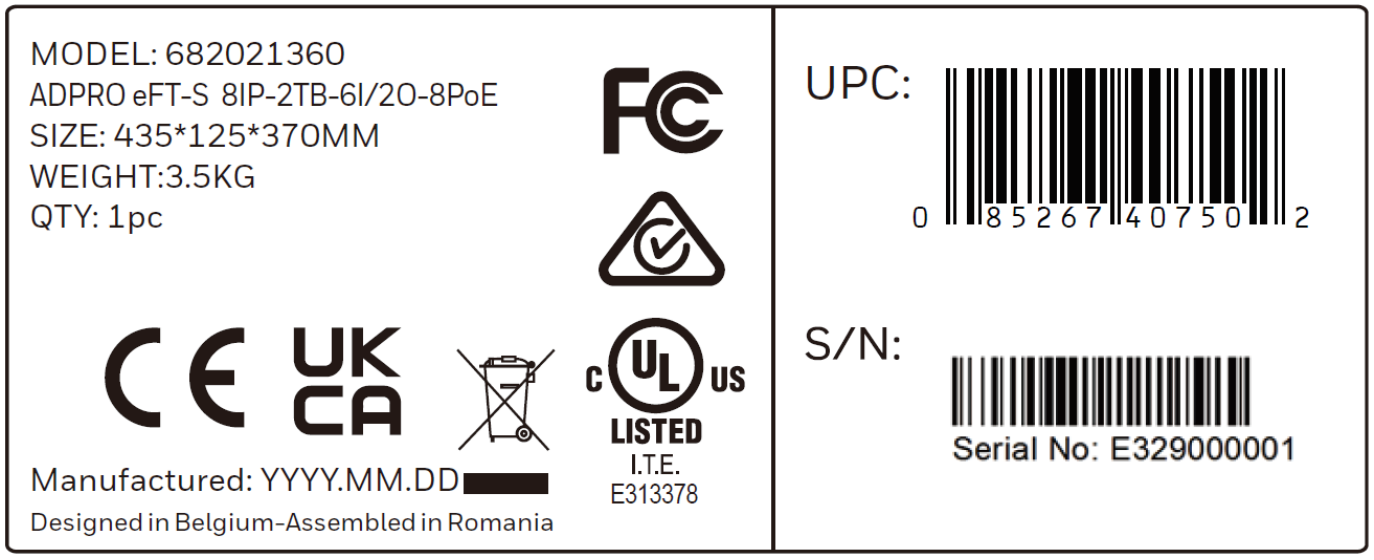



Honeywell
c UL us
LISTED
I.T.E.
E313378
MODEL: 680021660
ADPRO eFT-S 8IP-6TB-6I/2O
INPUT:AC100-240V ~ ,3A,50-60Hz, Max. 180W
3*USB output: 5V⎓500mA
Code 128A
MAC: XX:XX:XX:XX:XX:XX
Code 128A
Serial No: XXXXXXXXXX
Manufactured: YYYY.MM.DD
UK CA
Designed in Belgium-Assembled in Romania


MODEL: 680021660
ADPRO eFT-S 8IP-6TB-6I/2O
SIZE: 435*125*370MM
WEIGHT:3.5KG
QTY: 1pc
UK CA
c UL us
LISTED
I.T.E.
E313378
Manufactured: YYYY.MM.DD
Designed in Belgium-Assembled in Romania
UPC:
0 85267 41040 3
S/N:
Serial No: E329000001


Honeywell
c UL us
LISTED
I.T.E.
E313378
MODEL: 682020060
ADPRO eFT-S 8IP-NO HDD-6I/2O-8PoE
INPUT:AC100-240V ~ ,3A,50-60Hz, Max. 180W
3*USB output: 5V⎓500mA
Code 128A
MAC: XX:XX:XX:XX:XX:XX
Code 128A
Serial No: XXXXXXXXXX
Manufactured: YYYY.MM.DD
UK CA
Designed in Belgium-Assembled in Romania
MODEL: 682020060
ADPRO eFT-S 8IP-NO HDD-6I/2O-8PoE
SIZE: 435*125*370MM
WEIGHT:3.5KG
QTY: 1pc
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c UL us
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0 85267 40640 6
S/N:
Serial No: E329000001


Honeywell
c UL us
LISTED
I.T.E.
E313378
MODEL: 682021360
ADPRO eFT-S 8IP-2TB-6I/2O-8PoE
INPUT:AC100-240V ~ ,3A,50-60Hz, Max. 180W
3*USB output: 5V⎓500mA
Code 128A
MAC: XX:XX:XX:XX:XX:XX
Code 128A
Serial No: XXXXXXXXXX
Manufactured: YYYY.MM.DD
UK CA
Designed in Belgium-Assembled in Romania


MODEL: 682021360
ADPRO eFT-S 8IP-2TB-6I/2O-8PoE
SIZE: 435*125*370MM
WEIGHT:3.5KG
QTY: 1pc
UK CA
c UL us
LISTED
I.T.E.
E313378
Manufactured: YYYY.MM.DD
Designed in Belgium-Assembled in Romania
UPC:
0 85267 40750 2
S/N:
Serial No: E329000001

14.2 Product Number Structure

Caution!

The product number on the label on your device indicates the device model and configuration **as it was originally delivered** by your supplier. If you have added, removed, or replaced items (HDDs, IP channel licenses…), the product number on the label **may no longer correspond with the actual configuration** of your device.

Note

Honeywell provides a broad range of eFT-S Series configurations, suitable for a wide variety of security system requirements.
For an overview of the available configurations, and for advice on selecting the one that best suits your needs, please contact your Honeywell Sales Representative.

Appendix A – Abbreviations

3G: third generation

4G: fourth generation

A: ampere

AGC: automatic gain control

AHCI: Advanced Host Controller Interface

APN: Access Point Name

ATD: adaptive threshold determination

A/V card: audio/video card

AWG: American wire gauge

BIOS: basic input output system

BNC: Bayonet Neill–Concelman

Cam: camera

CBR: constant bitrate

CD: compact disk

CHAP: Challenge-Handshake Authentication Protocol

CIDR: Classless Inter-Domain Routing

CIF: common intermediate format

CMS: central monitoring station

CPU: central processing unit

DCE: data circuit-terminating equipment

DCIF: double CIF

DEOL: dual end of line

/dev/ttyU1: USB input 1

DHCP: Dynamic Host Configuration Protocol

DIN: Deutsches Institut für Normung (German national organisation for standardisation)

DNS: domain name system

DOM: disk-on-a-module

DP: DisplayPort

DTC: down the coax

DTE: data terminal equipment

DVD: digital video disk

DVI-I: Digital Visual Interface (digital and analogue)

EIO: Extension I/O

EMS: Event Management System

eth: Ethernet interface

fps: frames per second

ft: foot/feet

FTDI: Future Technology Devices International

FTP: file transfer protocol

GB: gigabyte

GDI: Graphics Device Interface

GHz: gigahertz

GND: ground

GUI: graphical user interface

HD: high definition

HDD: hard disk drive

HPET: High Precision Event Timer

HTTP: hypertext transfer protocol

Hz: Hertz

IC: interconnection

ID: identifier

I/O: input/output

IP: internet protocol

ISDN: Integrated Services for Digital Network

IT: Information Technology

jpg: Joint Photographic Experts Group

kbps: kilobits per second

kB: kilobyte

LAN: local area network

LED: light emitting diode

m: metre

mA: milliampere

MAC: Media Access Control

MB: megabyte

Mbps: megabits per second

MIC: microphone

MIO: Main I/O

mm: millimetre

MS-CHAPv1/MS-CHAPv2: Microsoft Challenge-Handshake Authentication Protocol, version 1/2

NAT: network address translation

NC: normally closed

NEOL: no end of line

NO: normally open

NTFS: new technology file system

NTP: network time protocol

NTSC: National Television System Committee

OS: operating system

OSD: on screen display

OTB: on the box

PAL: Phase Alternating Line

PAP: password authentication protocol

PC: personal computer

PCI: peripheral component interconnect

pF: picofarad

PIN: personal identification number

PIR: passive infrared

PoE: power over Ethernet

PPP: point-to-point protocol

PSTN: public switched telephone network

PTZ: pan tilt zoom

QCIF: quarter CIF

QSIF: quarter SIF

RAID: redundant array of independent disks

RH: relative humidity

RTP: real-time transport protocol

RTSP: real-time streaming protocol

SATA: serial ATA

SDK: software development kit

SEOL: single end of line

SIF: source input format

SIM: subscriber identity module

SMART: Self-Monitoring, Analysis, and Reporting Technology

SMTP: Simple Mail Transfer Protocol

SP: Service Pack

SPDT: single pole double throw

SPK: speaker

SVGA: Super Video Graphics Array

SXGA: Super Extended Graphics Array

Sync: synchronisation

TB: terabyte

TCP: transmission control protocol

TLS: transport layer security

TX: transmission

UDP: user datagram protocol

USB: Universal Serial Bus

VAC: voltage alternating current

VBR: variable bitrate

VCP: VideoCentral Platinum

VDC: voltage direct current

VGA: Video Graphics Array

Vp-p: voltage peak-to-peak

W: watt

W x H x D: width x height x depth

XGA: eXtended Graphics Array

YUV: colour space with separate luminance (brightness) and chrominance (colour) components

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