



Smart *PI* EYE-HD

USER GUIDE

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Contents

1. INTRODUCTION	1
2. FEATURES AT A GLANCE	2
3. HARDWARE OVERVIEW	3
4. SETTING UP	4
4.1. One-word Provisioning	5
4.2. System Tab	6
4.2.1. Setting up Admin	6
4.2.2. Network Settings.....	7
4.2.3. LDAP Setting.....	10
4.2.4. VPN Settings.....	14
4.2.5. Update.....	15
4.2.6. BACKUP	16
4.2.7. SYSTEM.....	17
4.3. Monitoring Tab	20
4.3.1. DISPLAY.....	20
4.3.2. HYUNDAI IT.....	21
4.3.3. Logs Tab	22
5. TECHNICAL DATA.....	24

1. INTRODUCTION

Thank you for choosing Smart pi EYE.

The Smart pi EYE-HD is the Embedded Media Player for the Smart pi EYE system. It is specifically designed to work in large network with many hundreds or even thousands of screens where maintenance and total cost of ownership is important.

The Smart pi EYE represents a fusion of cutting-edge technology and user-friendly design, allowing you to manage all functions from single server.

The Smart pi EYE-HD comes with a built-in web server and one-word provisioning system, simply type the host name and the EYE-HD will automatically connect and provision itself with the correct display settings.

It transforms the way information is presented and shared in various environments, including retail spaces, corporate offices, public areas, educational institutions, transportation hubs, and more. You can also use it at various transportation networks, such as trains, buses, subways, and airports, to provide passengers' real-time data about their journey while enhancing their experience. This system can also be used to display a static message to a large audience as well.

For networks that do not support the one-word provisioning and custom installations (like VPN requirements) it is possible to access and configure the advanced features.

Some advanced features also allow further monitoring of the units for the system administrators.

This comprehensive user manual will guide you through the **advanced** setup, configuration, and utilization of your Smart pi EYE-HD advanced functions which are only required under specific installation requirements. The step-by-step instructions and detailed explanations will ensure that you make the most of every feature this product has to offer. It will help you to explore its various functions, experiment with its customizable settings, and integrate it seamlessly into your information and network security requirements.

The screenshot shows the 'System' configuration page with the 'NETWORK' tab selected. The page is titled 'CONFIGURE IP ADDRESS AND DNS'. The settings are as follows:

Field	Value
INTERFACE TYPE:	<input checked="" type="radio"/> Static <input type="radio"/> DHCP
IP ADDRESS	192.168.101.65
NETWORK MASK	255.255.255.0
GATEWAY	192.168.101.1
DNS SERVER	192.168.10.1
DNS SERVER (SECONDARY)	192.168.10.2
DNS SUFFIX	stagotec.com.au
HOSTNAME	EYE-DEFAULT
NTP SERVER	pool.ntp.org

An 'UPDATE' button is located at the bottom left of the configuration area.

Please read this manual before operating your new Smart pi EYE to ensure the safe and best-practice operation of your unit that will last for years to come.

For more information enquiries are welcome at: <https://service.smart-pi.info>

2. FEATURES AT A GLANCE

Connectivity	Up to 1920 x 1080 HDMI connectivity support.
Input Contact Closures	2x GPI / Input Contact Closures.
Output Contact Closures	2 x GPO / Outputs Closures.
Balanced Audio Outputs	2 x Balance Audio Outputs.
Output Screen	A small display for System Name, Network Address and control.
5V USB Power	A 5V USB Power requirement that can be powered from a screen or another 5V supply.
Configuration	Is completely web-based configuration and management.
Supported Protocols	Smart pi EYE Server Rest API
Integrations	Smart pi ECOsystem LDAP for Single Sign On Hyundai IT Industrial Displays

3. HARDWARE OVERVIEW

Smart pi EYE features no moving parts and can be controlled in real-time with the help of the main web interface. On the actual EYE-HD unit, you need only the device name for basic configuration.



The front side of the device has 3 USB slots, an 10/100/1000 ethernet port and a status screen.



The rear side of the device has the HDMI output, a micro-USB slot that accepts 5v to power the unit, 2 GPI/O and 2 balanced audio outputs on a db 25.

There are indoor and outdoor versions available.

4. SETTING UP

The Smart pi EYE-HD has a one-word provisioning setup feature allowing it to simply be given its hostname and then being able to configure all settings from the server.

This feature requires the network to be configured with DHCP and DNS to support this feature.

Once the network is configured all units will be able to use the one-word provisioning feature.

Smart pi EYE-HD hardware is installed on each screen and only requires USB power (from the screen or another source) and a network connection with a 1080p HDMI output to the screen. It has no moving parts and is designed for use in industrial environments, the only configuration needed on the EYE-HD is its name all other parameters are managed in the Smart pi EYE Master web interface.

The connected screen resolution is detected automatically using the HDMI connection and HDCP protocol, this allows for integration with custom screen resolutions including stretched (1920x540) screens etc.

The hardware, however, comes with 3 USB ethernet ports, an HDMI port, Micro USB – 5v power, 2 GPI/O, 2 x balanced audio outputs, and a status screen.

To remain within warranty, please install the unit in a dry area that is not subject to extreme heat (indoor model). A well-ventilated area is ideal. Importantly, take care that the mounting position allows for clear access to the front and rear panels of the unit.

Only remove the outer casing of the Smart pi EYE-HD to update the SD card if required.

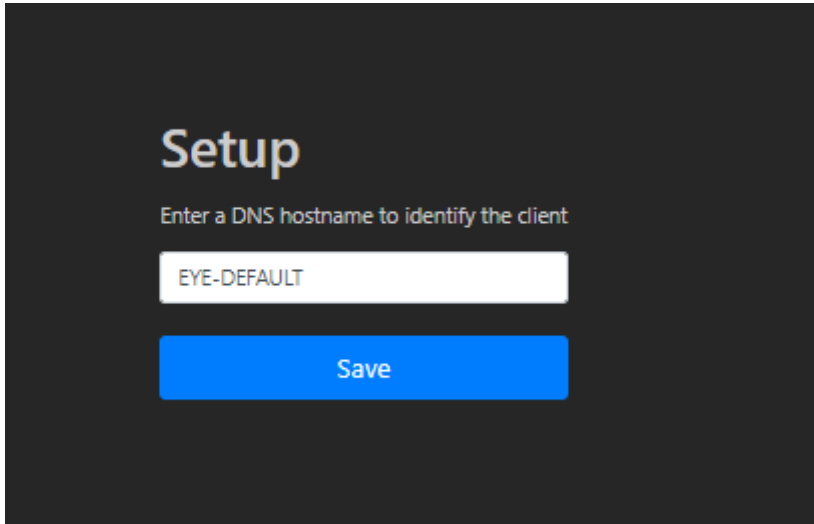
4.1. One-word Provisioning

When using one-word provisioning please visit <http://IPADDRESS> to access the unit.

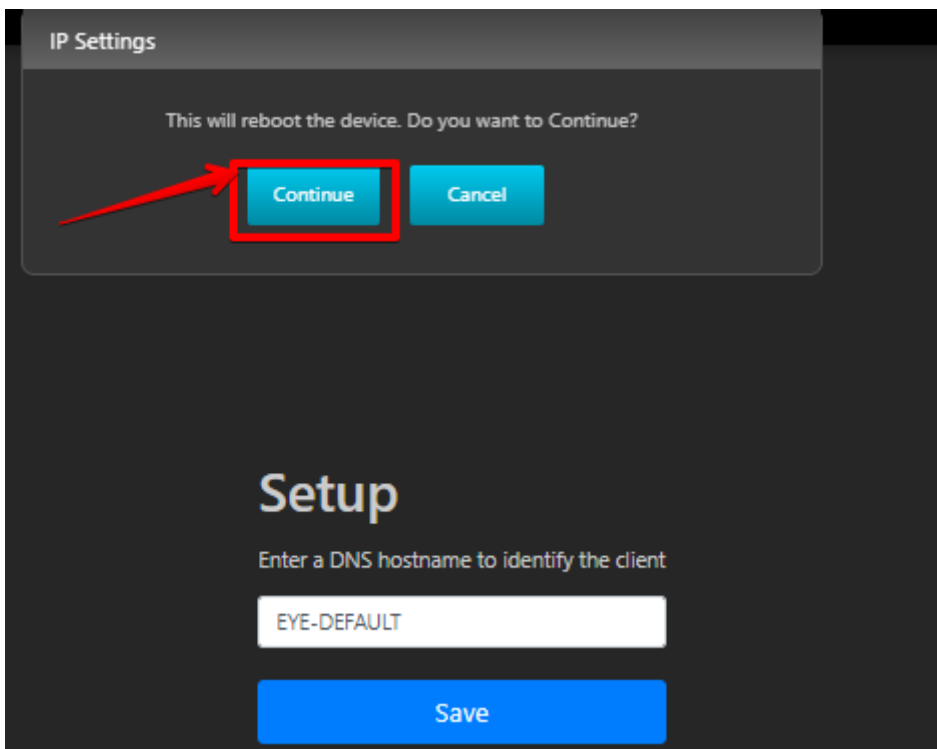
Screens can be added to the network by giving a DNS Hostname and clicking the **Save** button.

If the screen has been pre provisioned in the Smart pi EYE server, the correct content will be displayed.

If you are connecting for the first time with a new name, the Smart pi EYE server will simply display a clock in the time zone the Smart pi EYE server is configured in.



Click **Continue** to join the network by connecting with the host.



Once you have updated the device name simply hit save and the unit will reboot and connect to the Smart pi EYE Server automatically.

4.2. System Tab

To access the administration interface please user <http://IPADDRESS/admin>

Click on **System** from the bottom of the screen to enter further settings.

The screenshot displays the 'System' configuration page. At the top, there are tabs for 'NETWORK', 'LDAP', 'VPN SETTINGS', 'UPDATE', 'BACKUP', and 'SYSTEM'. Below these is a section titled 'CONFIGURE IP ADDRESS AND DNS'. The fields are as follows:

Field	Value
INTERFACE TYPE:	<input type="radio"/> Static <input checked="" type="radio"/> DHCP
IP ADDRESS	192.168.101.85
NETWORK MASK	255.255.255.0
GATEWAY	192.168.101.1
DNS SERVER	192.168.10.1
DNS SERVER (SECONDARY)	192.168.10.2
DNS SUFFIX	stagefec.com.au
HOSTNAME	EYE-DEFAULT
NTP SERVER	pool.ntp.org

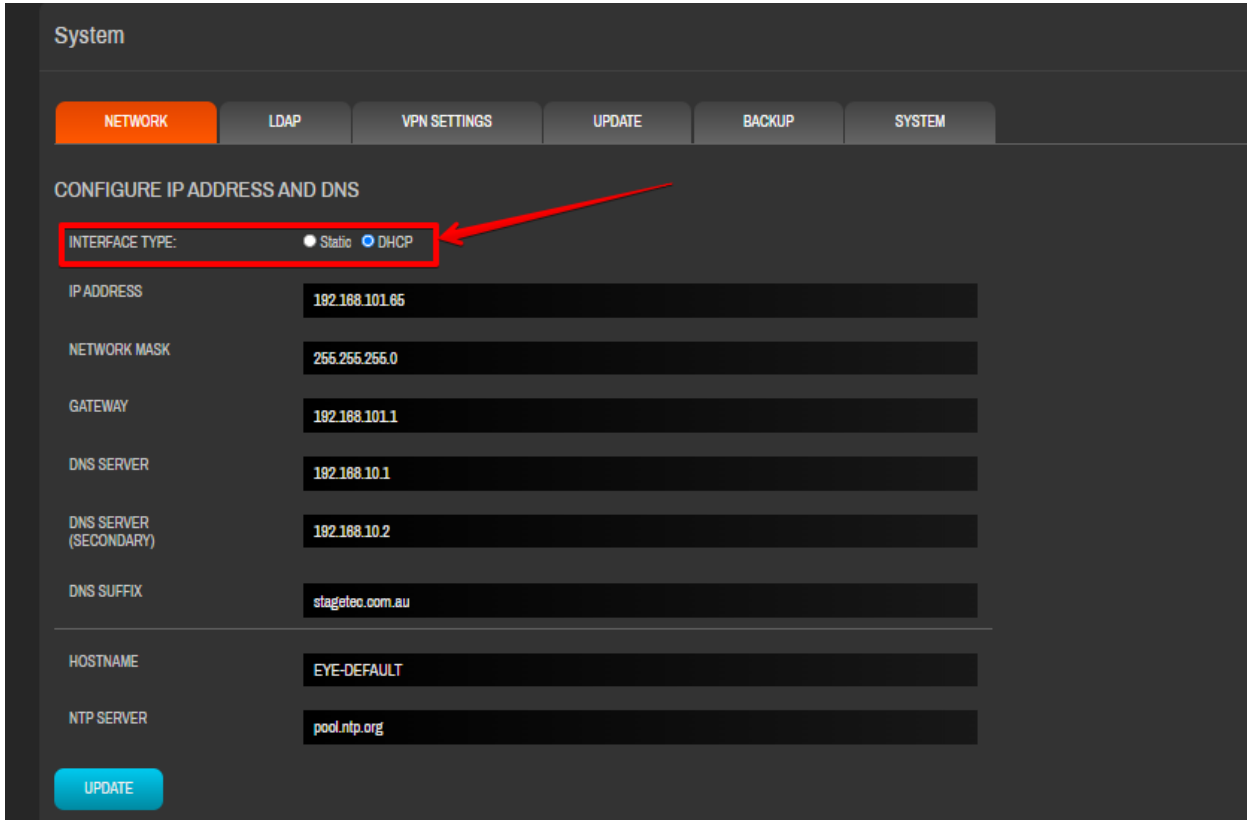
An 'UPDATE' button is located at the bottom left. At the bottom right, there is a navigation bar with three items: 'System' (highlighted with a red box and a red arrow), 'Monitoring', and 'Logs'.

4.2.1. Setting up Admin

The Admin Panel of Smart pi EYE-HD showcases settings required by an admin screen to control other connected screens. It comes with various sections like Network, LDAP, VPN Settings, Update, Backup, and Systems. Moreover, three tabs are also included at the bottom of the screen including System, Monitoring, and Logs.

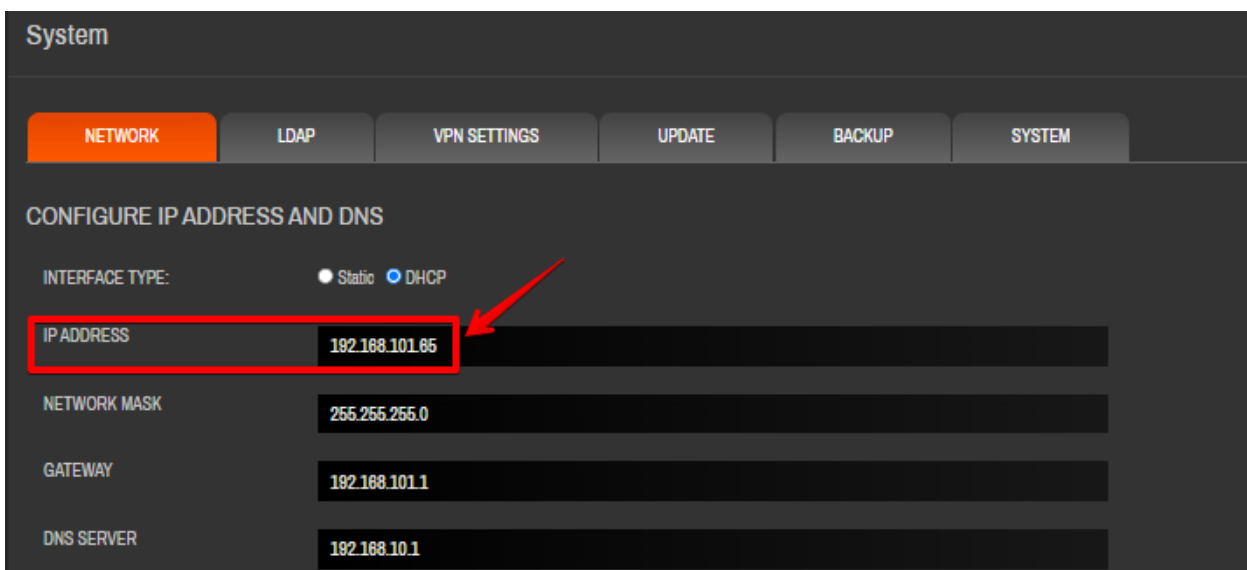
4.2.2. Network Settings

You can choose between **DHCP** and **Static** radio buttons for your **Interface Types**. Static and DHCP are two methods of assigning IP addresses to devices on a network. A static setting will require you to manually assign an IP address to a device and it will remain constant. However, the DHCP setting will automatically assign IP addresses to devices on a network, which can change whenever a device connects to the network.



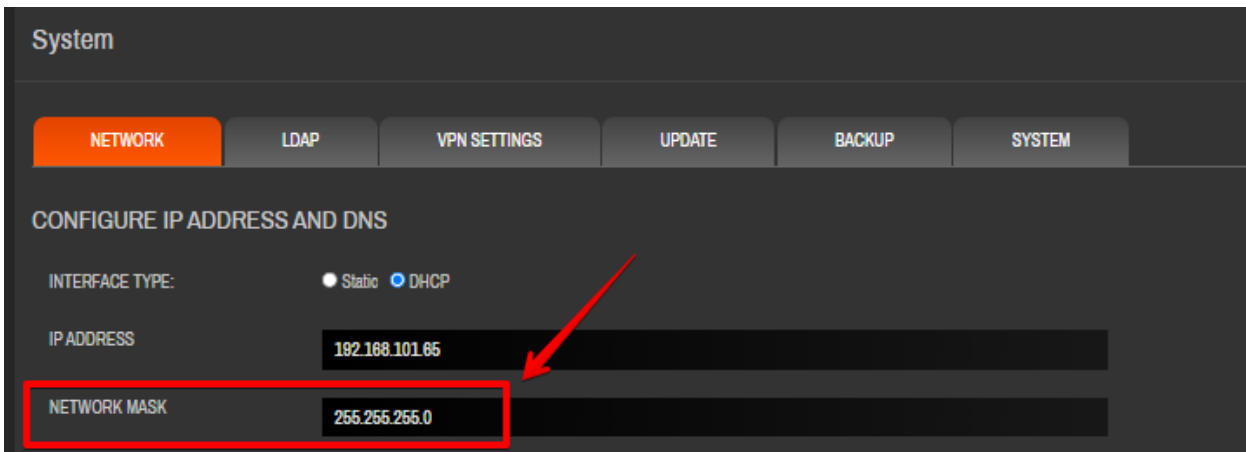
The screenshot shows the 'System' configuration page with the 'NETWORK' tab selected. Under the heading 'CONFIGURE IP ADDRESS AND DNS', the 'INTERFACE TYPE' is set to 'DHCP' (indicated by a blue radio button and a red arrow pointing to it). The 'Static' option is unselected. Below this, several fields are visible: IP ADDRESS (192.168.101.65), NETWORK MASK (255.255.255.0), GATEWAY (192.168.101.1), DNS SERVER (192.168.10.1), DNS SERVER (SECONDARY) (192.168.10.2), DNS SUFFIX (stageteo.com.au), HOSTNAME (EYE-DEFAULT), and NTP SERVER (pool.ntp.org). An 'UPDATE' button is located at the bottom left.

Next, enter the IP Address in the **IP ADDRESS** field. This will represent the IP address of the admin terminal where all devices will be connected.



The screenshot shows the same 'System' configuration page. The 'INTERFACE TYPE' remains 'DHCP'. A red arrow points to the 'IP ADDRESS' field, which now contains the value '192.168.101.65'. The other fields (NETWORK MASK, GATEWAY, DNS SERVER, etc.) are visible but not highlighted.

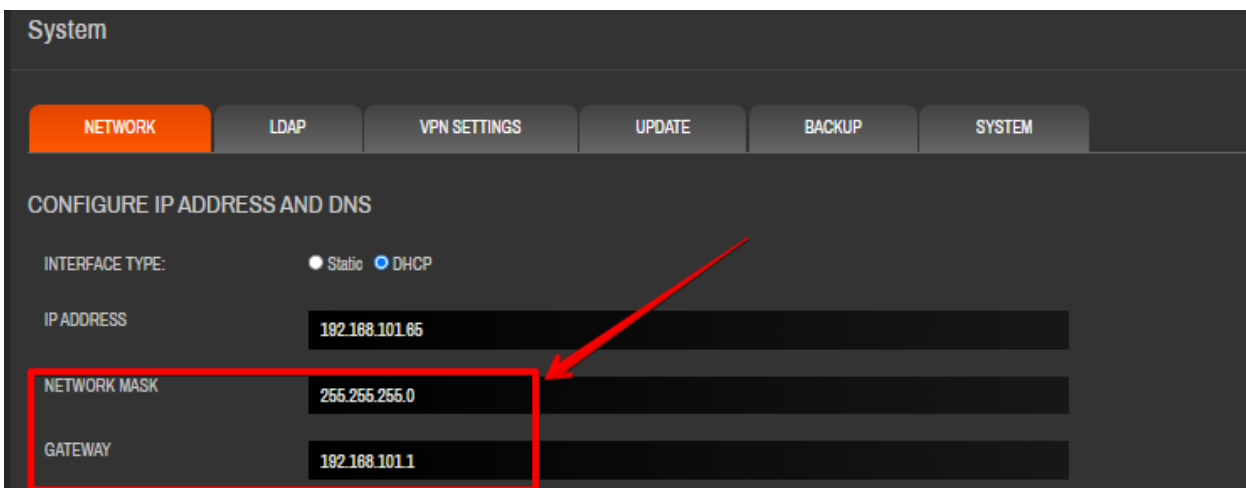
Enter **NETWORK MASK** in the designated field. A network mask is also known as a subnet mask that is used to define the boundaries of a network. This set of numbers determines which part of an IP address corresponds to the network portion and which part corresponds to the host portion.



The screenshot shows the 'System' configuration page with the 'NETWORK' tab selected. Under the heading 'CONFIGURE IP ADDRESS AND DNS', the 'INTERFACE TYPE' is set to 'Static'. The 'IP ADDRESS' field contains '192.168.101.65'. The 'NETWORK MASK' field is highlighted with a red box and contains '255.255.255.0'. A red arrow points to the 'NETWORK MASK' field.

Field	Value
INTERFACE TYPE	Static
IP ADDRESS	192.168.101.65
NETWORK MASK	255.255.255.0

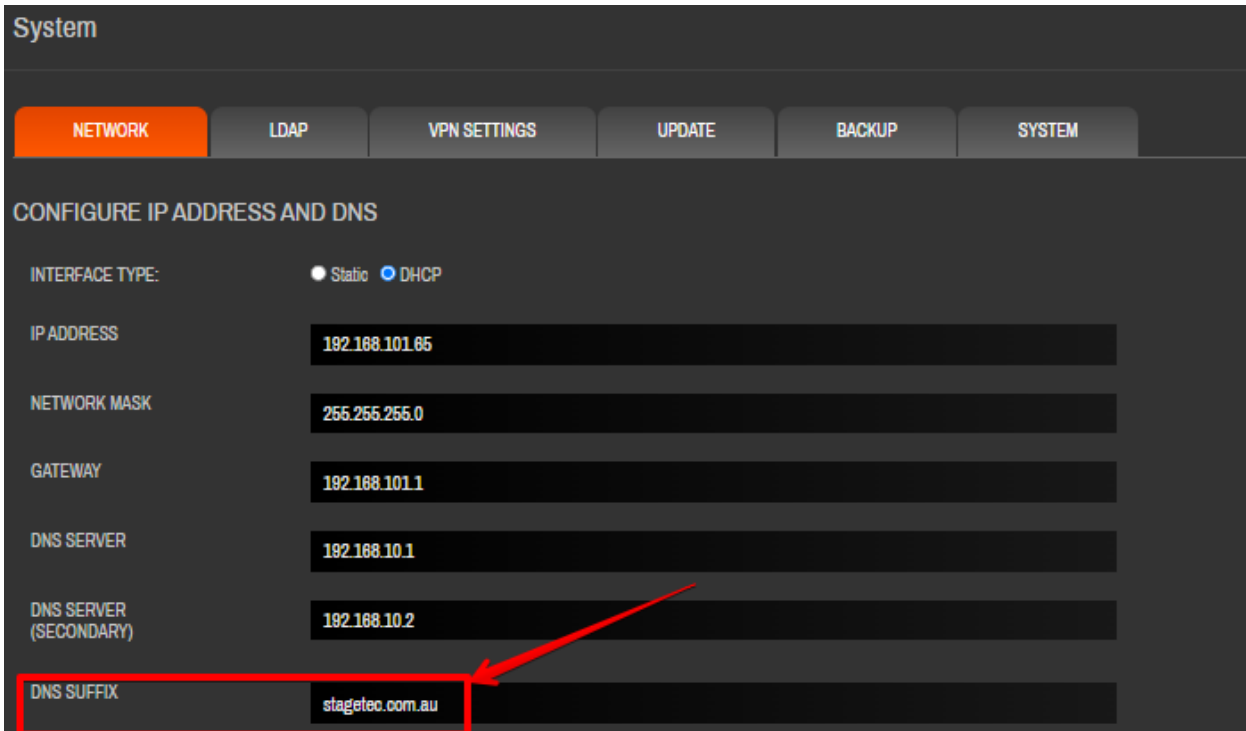
Enter addresses for **DNS SERVER** and **GATEWAY** in the given fields. A gateway in digital signage serves as an entry and exit point for data traffic between the local network and external networks whereas a DNS server's primary purpose is to translate human-readable domain names (like `www.example.com`) into IP addresses that computers and devices understand. You can also add a secondary DNS server if you have one.



The screenshot shows the 'System' configuration page with the 'NETWORK' tab selected. Under the heading 'CONFIGURE IP ADDRESS AND DNS', the 'INTERFACE TYPE' is set to 'Static'. The 'IP ADDRESS' field contains '192.168.101.65'. The 'NETWORK MASK' field is highlighted with a red box and contains '255.255.255.0'. The 'GATEWAY' field is also highlighted with a red box and contains '192.168.101.1'. A red arrow points to the 'NETWORK MASK' field.

Field	Value
INTERFACE TYPE	Static
IP ADDRESS	192.168.101.65
NETWORK MASK	255.255.255.0
GATEWAY	192.168.101.1

Now, add the address of **DNS SUFFIX**. It helps devices on a network complete unqualified domain names. An unqualified domain name lacks the full domain hierarchy, such as "server" instead of "server.example.com". The DNS suffix provides the missing part of the domain name, enabling devices to fully resolve and access resources on the network or the internet.



System

NETWORK LDAP VPN SETTINGS UPDATE BACKUP SYSTEM

CONFIGURE IP ADDRESS AND DNS

INTERFACE TYPE: Static DHCP

IP ADDRESS: 192.168.101.65

NETWORK MASK: 255.255.255.0

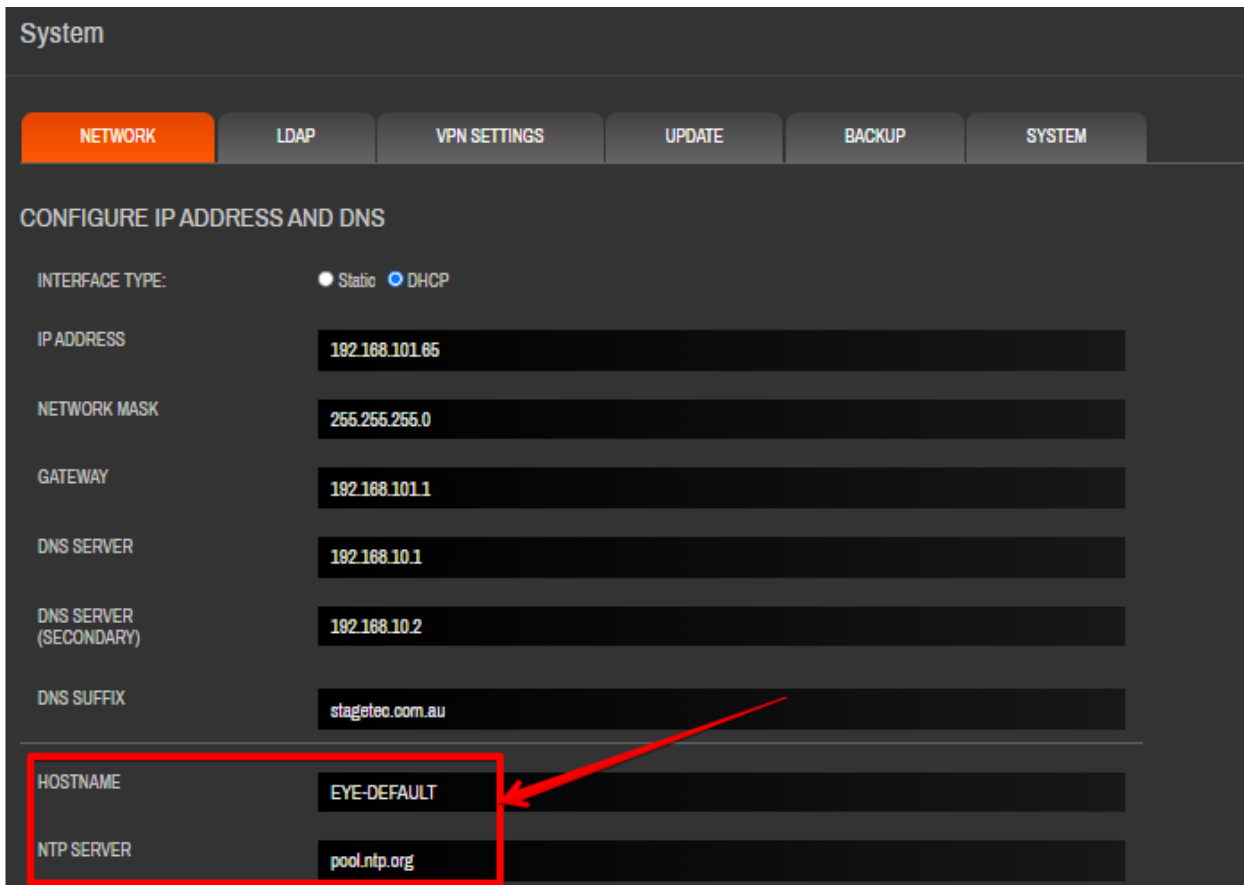
GATEWAY: 192.168.101.1

DNS SERVER: 192.168.10.1

DNS SERVER (SECONDARY): 192.168.10.2

DNS SUFFIX: stagetec.com.au

In the end, set up a **HOST NAME** and **NTP SERVER** to assign a unique identifier to your device on a network and synchronize the clocks of devices within a network. Host name are human-readable labels that help users and other devices identify and access that specific device and is used to identify the unit with the Smart pi EYE server.



System

NETWORK LDAP VPN SETTINGS UPDATE BACKUP SYSTEM

CONFIGURE IP ADDRESS AND DNS

INTERFACE TYPE: Static DHCP

IP ADDRESS: 192.168.101.65

NETWORK MASK: 255.255.255.0

GATEWAY: 192.168.101.1

DNS SERVER: 192.168.10.1

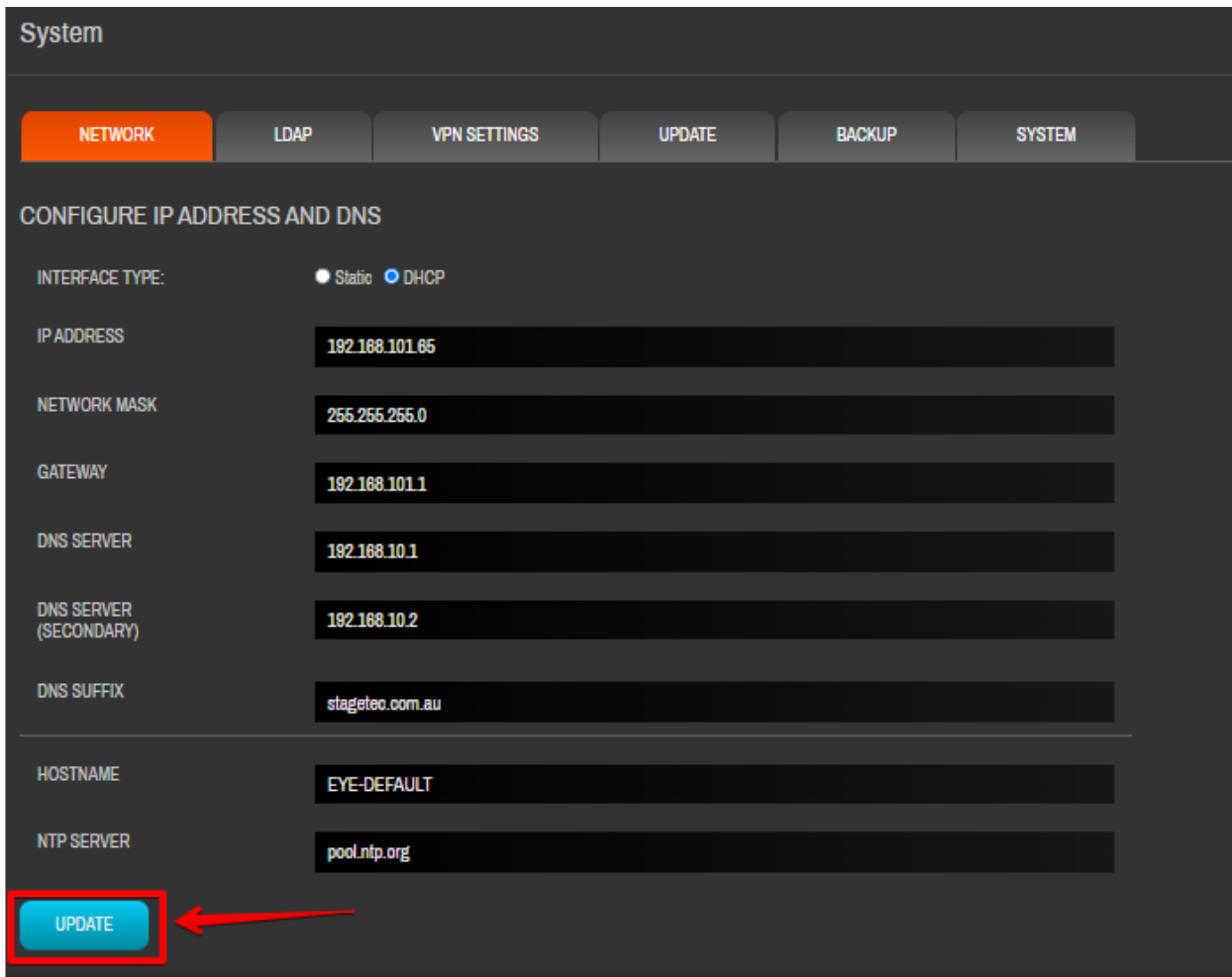
DNS SERVER (SECONDARY): 192.168.10.2

DNS SUFFIX: stagetec.com.au

HOSTNAME: EYE-DEFAULT

NTP SERVER: pool.ntp.org

Once done, click **UPDATE** to update all the data you entered into the fields.



System

NETWORK LDAP VPN SETTINGS UPDATE BACKUP SYSTEM

CONFIGURE IP ADDRESS AND DNS

INTERFACE TYPE: Static DHCP

IP ADDRESS: 192.168.101.65

NETWORK MASK: 255.255.255.0

GATEWAY: 192.168.101.1

DNS SERVER: 192.168.10.1

DNS SERVER (SECONDARY): 192.168.10.2

DNS SUFFIX: stagetec.com.au

HOSTNAME: EYE-DEFAULT

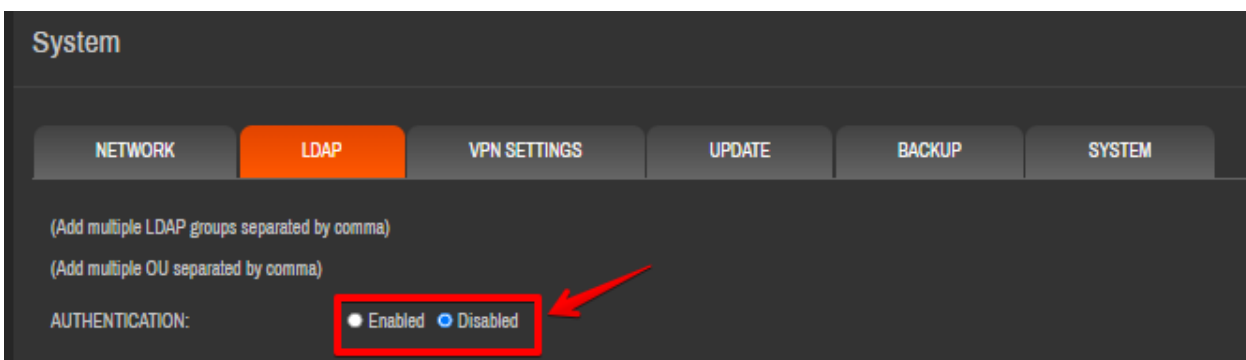
NTP SERVER: pool.ntp.org

UPDATE

4.2.3. LDAP Setting

This section allows you to use LDAP (Lightweight Directory Access Protocol) protocol for accessing and maintaining distributed directory information services over a network. Allowing user to limit access with single sign on.

Start by clicking the radio button of your choice to choose whether you'd like to enable or disable **Authentication**.



System

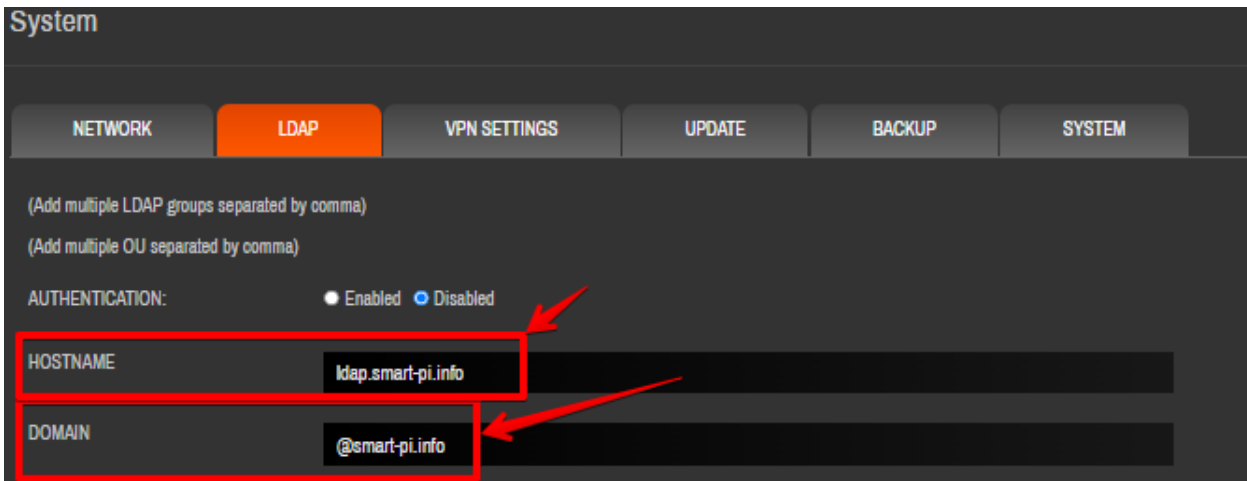
NETWORK LDAP VPN SETTINGS UPDATE BACKUP SYSTEM

(Add multiple LDAP groups separated by comma)

(Add multiple OU separated by comma)

AUTHENTICATION: Enabled Disabled

Proceed with adding the **Host Name** in the given field.



System

NETWORK LDAP VPN SETTINGS UPDATE BACKUP SYSTEM

(Add multiple LDAP groups separated by comma)

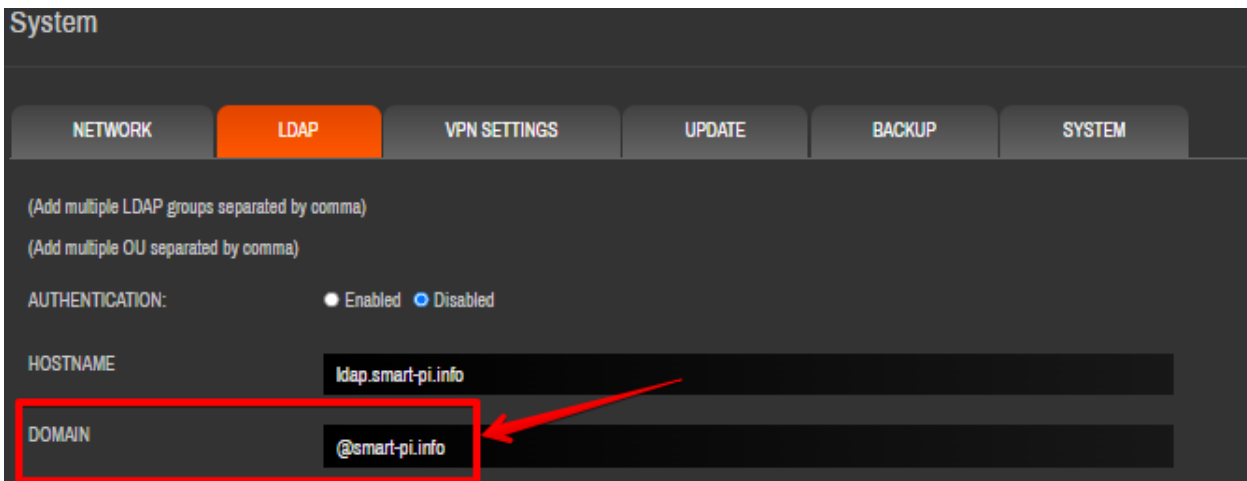
(Add multiple OU separated by comma)

AUTHENTICATION: Enabled Disabled

HOSTNAME ldap.smart-pi.info

DOMAIN @smart-pi.info

Add the **Domain** in your LDAP settings. This domain will refer to a base DN or Distinguished Name, which will be used to define the starting point within the LDAP directory tree for various operations.



System

NETWORK LDAP VPN SETTINGS UPDATE BACKUP SYSTEM

(Add multiple LDAP groups separated by comma)

(Add multiple OU separated by comma)

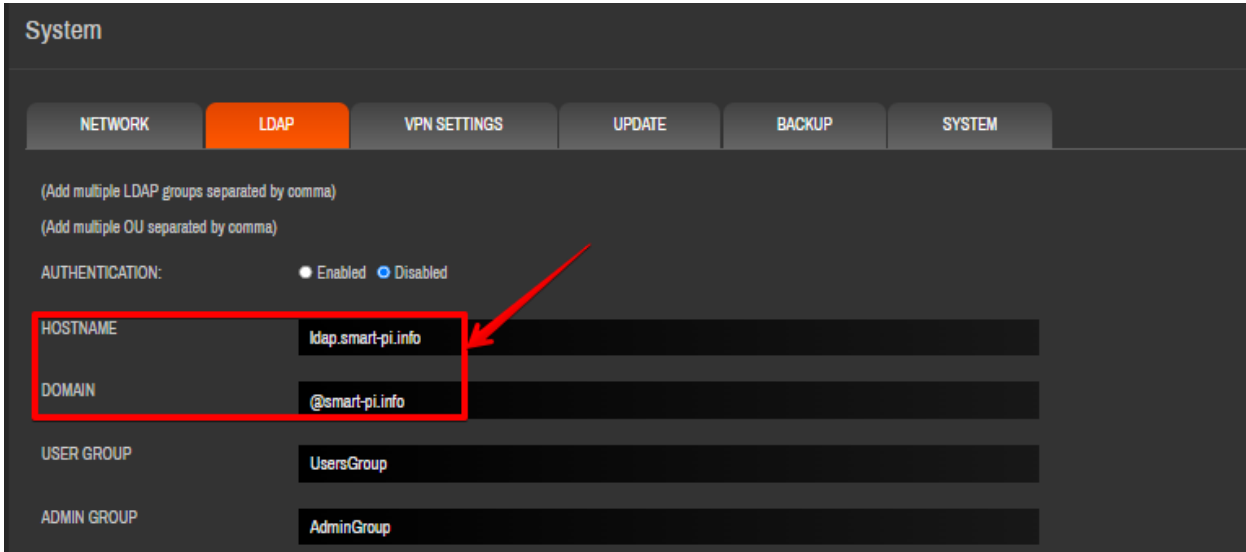
AUTHENTICATION: Enabled Disabled

HOSTNAME ldap.smart-pi.info

DOMAIN @smart-pi.info

Now, add **User Group** and **Admin Group** in the given fields. The name entered in the **ADMIN GROUP** will represent a group of users with administrative privileges and special permissions within the directory or network. The name entered in the **USER GROUP** will represent a group of user entries organized together for administrative or access control purposes.

Users can only read values where Administrators are able to make changes to the device.



System

NETWORK LDAP VPN SETTINGS UPDATE BACKUP SYSTEM

(Add multiple LDAP groups separated by comma)
(Add multiple OU separated by comma)

AUTHENTICATION: Enabled Disabled

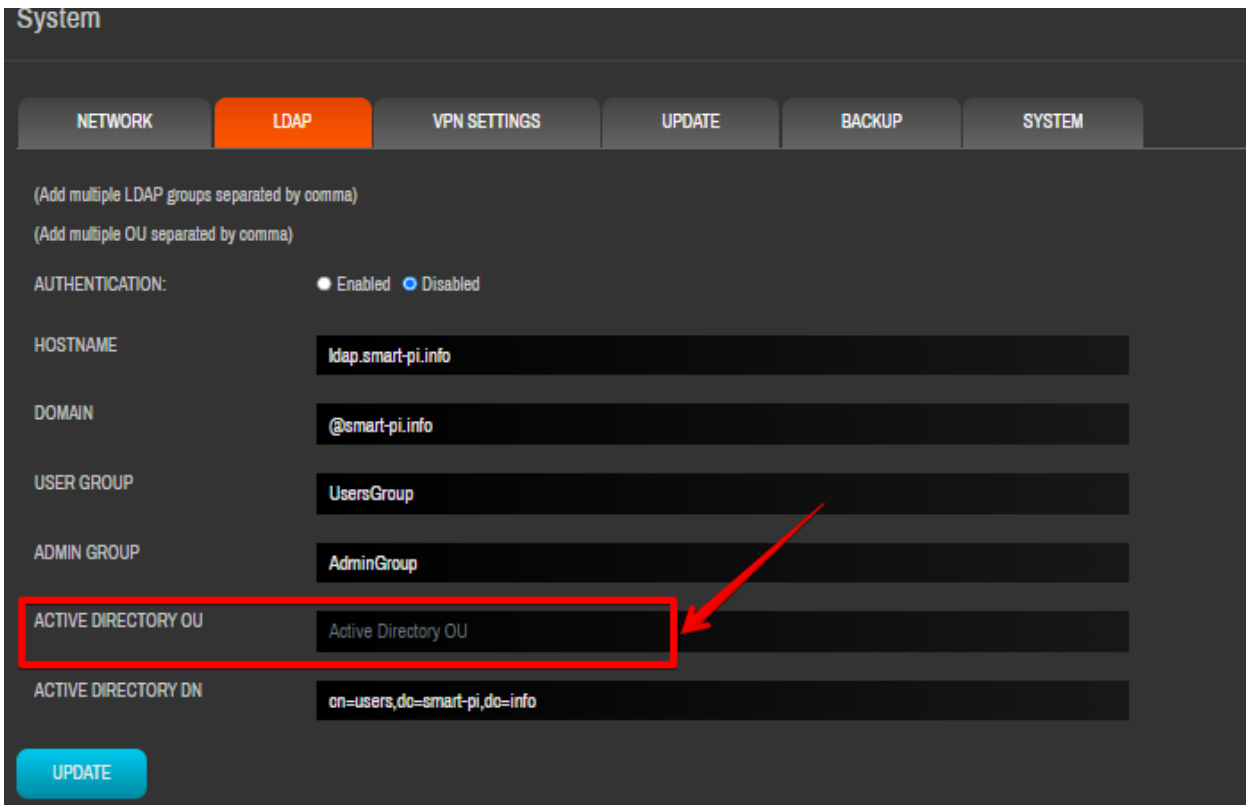
HOSTNAME ldap.smart-pi.info

DOMAIN @smart-pi.info

USER GROUP UsersGroup

ADMIN GROUP AdminGroup

In the end, add **ACTIVE DIRECTORY OU** which will organize and manage objects in a logical and hierarchical manner allowing administrators to apply group policies, permissions, and other settings to a specific subset of objects within a domain.



System

NETWORK LDAP VPN SETTINGS UPDATE BACKUP SYSTEM

(Add multiple LDAP groups separated by comma)
(Add multiple OU separated by comma)

AUTHENTICATION: Enabled Disabled

HOSTNAME ldap.smart-pi.info

DOMAIN @smart-pi.info

USER GROUP UsersGroup

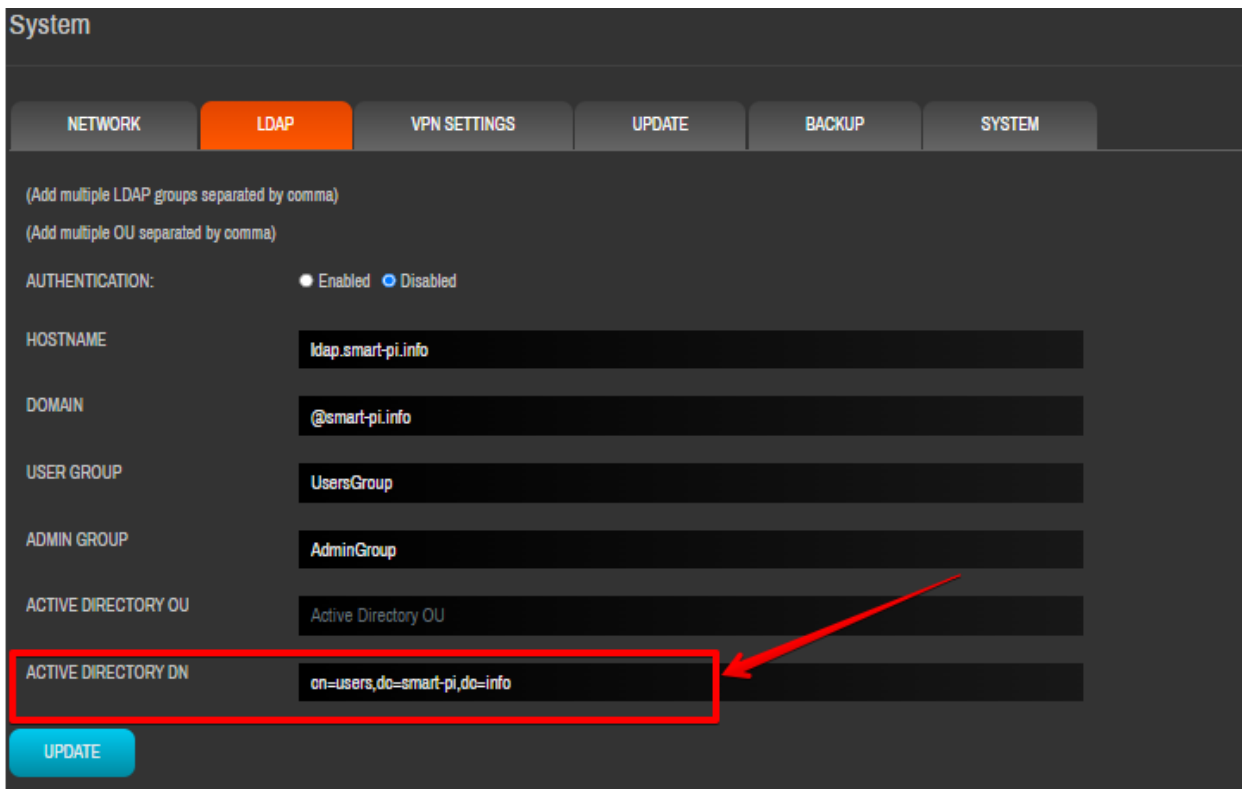
ADMIN GROUP AdminGroup

ACTIVE DIRECTORY OU Active Directory OU

ACTIVE DIRECTORY DN ou=users,dc=smart-pi,dc=info

UPDATE

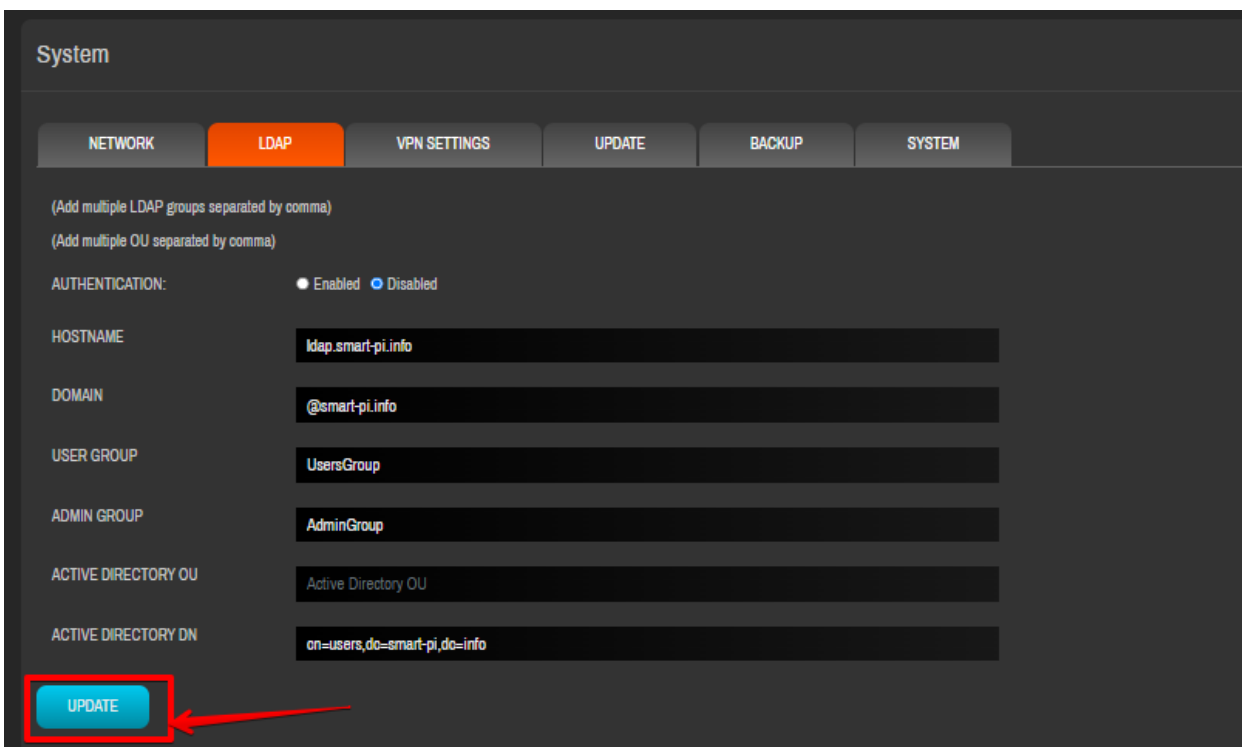
Also, add **ACTIVE DIRECTORY DN**, which will represent the object's full path within the directory structure, starting from the object itself and going up to the root of the domain. In LDAP, it provides a way to uniquely identify and locate objects in a directory.



The screenshot shows the 'System' configuration page with the 'LDAP' tab selected. The 'ACTIVE DIRECTORY DN' field is highlighted with a red box, and a red arrow points to it from the right. The field contains the value 'on=users,dc=smart-pi,dc=info'. Below the fields is an 'UPDATE' button.

NETWORK	LDAP	VPN SETTINGS	UPDATE	BACKUP	SYSTEM
(Add multiple LDAP groups separated by comma)					
(Add multiple OU separated by comma)					
AUTHENTICATION:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled				
HOSTNAME	ldap.smart-pi.info				
DOMAIN	@smart-pi.info				
USER GROUP	UsersGroup				
ADMIN GROUP	AdminGroup				
ACTIVE DIRECTORY OU	Active Directory OU				
ACTIVE DIRECTORY DN	on=users,dc=smart-pi,dc=info				
<input type="button" value="UPDATE"/>					

When done, click the **UPDATE** button at the bottom.



The screenshot shows the 'System' configuration page with the 'LDAP' tab selected. The 'UPDATE' button at the bottom left is highlighted with a red box, and a red arrow points to it from the right. The 'ACTIVE DIRECTORY DN' field now contains the value 'on=users,dc=smart-pi,dc=info'.

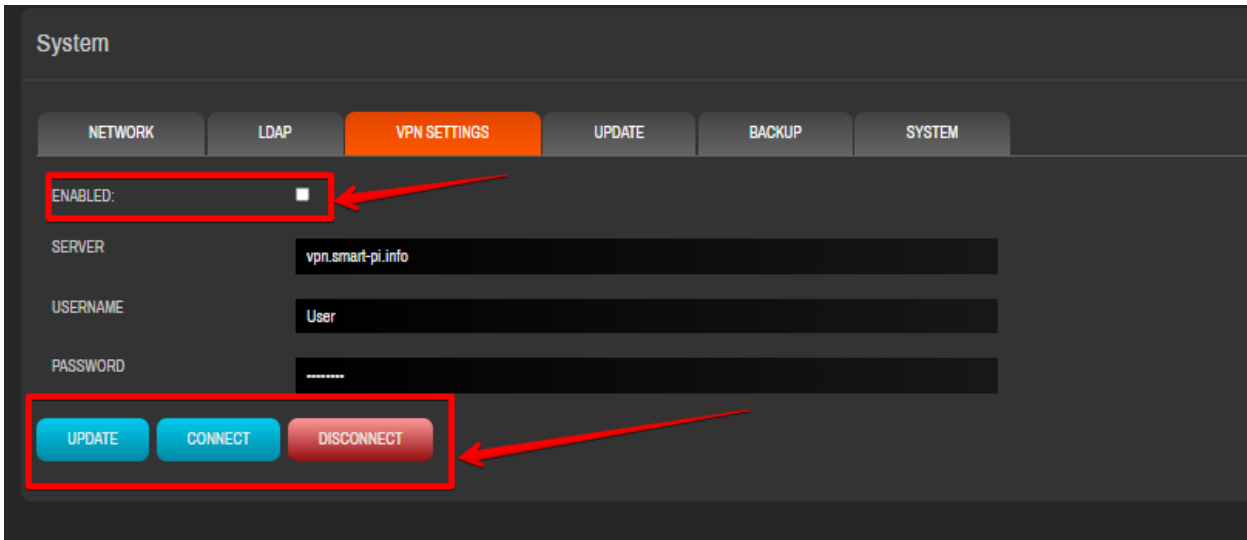
NETWORK	LDAP	VPN SETTINGS	UPDATE	BACKUP	SYSTEM
(Add multiple LDAP groups separated by comma)					
(Add multiple OU separated by comma)					
AUTHENTICATION:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled				
HOSTNAME	ldap.smart-pi.info				
DOMAIN	@smart-pi.info				
USER GROUP	UsersGroup				
ADMIN GROUP	AdminGroup				
ACTIVE DIRECTORY OU	Active Directory OU				
ACTIVE DIRECTORY DN	on=users,dc=smart-pi,dc=info				
<input type="button" value="UPDATE"/>					

4.2.4. VPN Settings

You can use PPTP VPN to connect to a Smart pi EYE server on a different network via VPN.

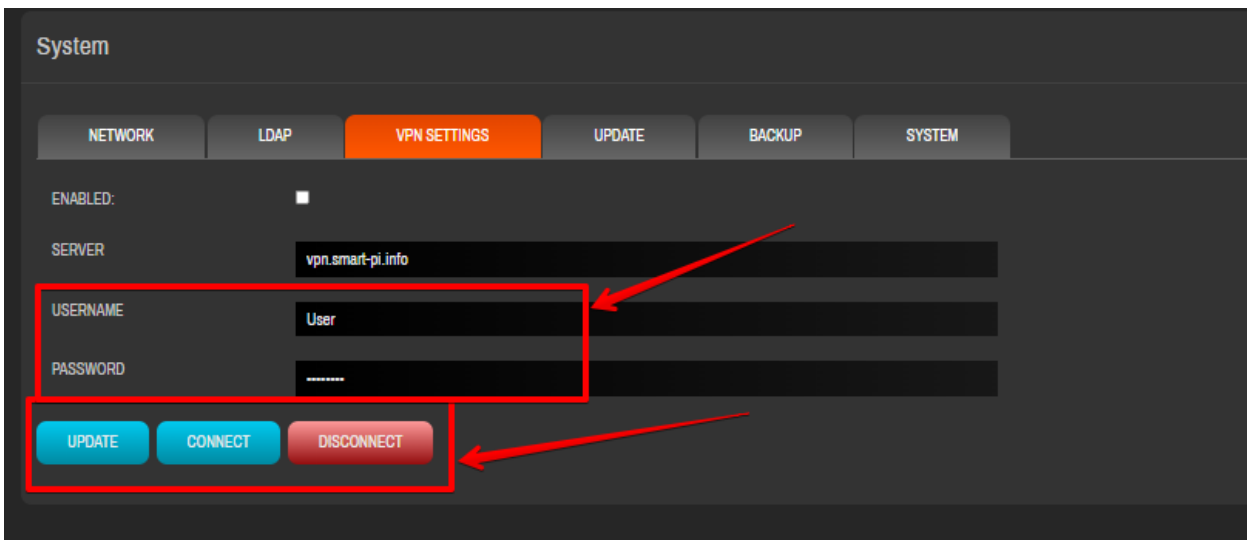
This should only be used when required and traversing the internet for example.

To Enable PPTP VPN, click the checkbox next to **ENABLED** to enable VPN and add the required settings from your network administrator.



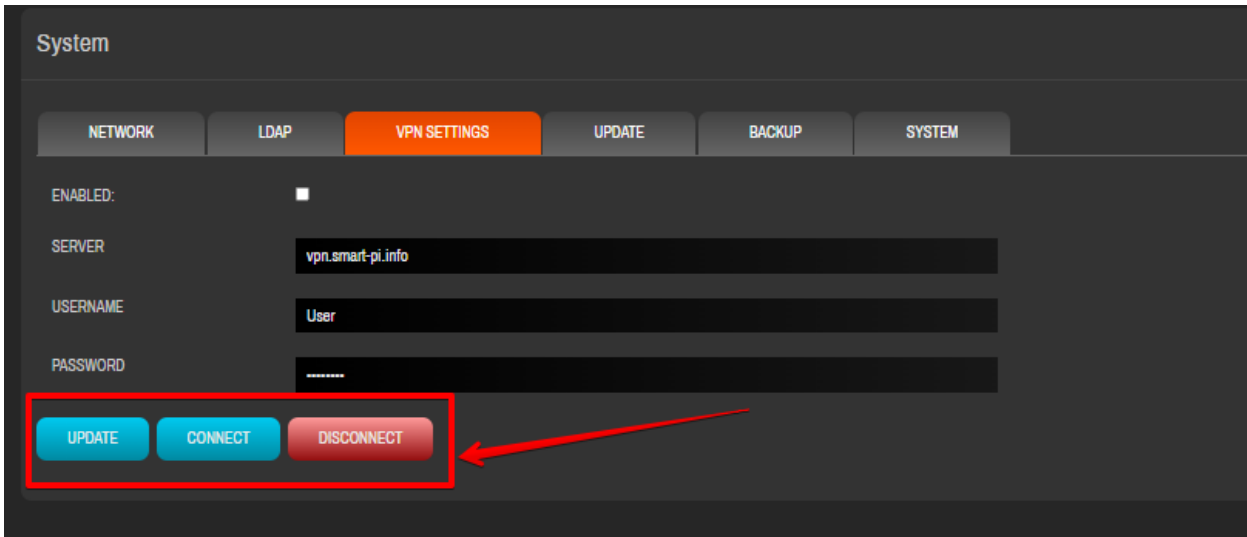
The screenshot shows the 'System' configuration page with the 'VPN SETTINGS' tab selected. The 'ENABLED' checkbox is checked and highlighted with a red box and an arrow. Below it, the 'SERVER' field contains 'vpn.smart-pi.info', 'USERNAME' contains 'User', and 'PASSWORD' is masked with asterisks. At the bottom, the 'UPDATE', 'CONNECT', and 'DISCONNECT' buttons are highlighted with a red box and an arrow.

Enter the **USERNAME** and **PASSWORD** of your Admin account.



The screenshot shows the 'System' configuration page with the 'VPN SETTINGS' tab selected. The 'ENABLED' checkbox is checked. The 'SERVER' field contains 'vpn.smart-pi.info', 'USERNAME' contains 'User', and 'PASSWORD' is masked with asterisks. The 'USERNAME' field is highlighted with a red box and an arrow. At the bottom, the 'UPDATE', 'CONNECT', and 'DISCONNECT' buttons are highlighted with a red box and an arrow.

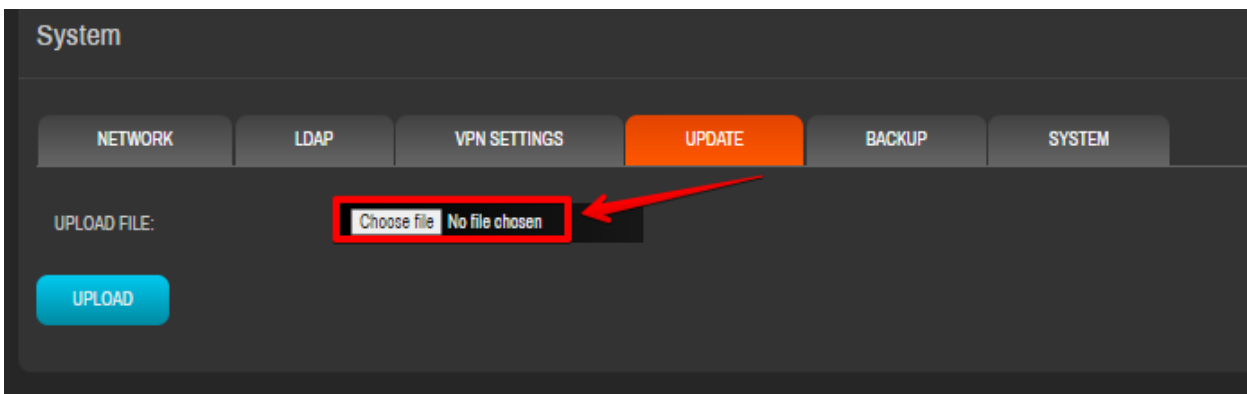
Click the **UPDATE** button to update to new settings or click the **CONNECT** button to connect to the network. You can also click the **DISCONNECT** button to disconnect the network.



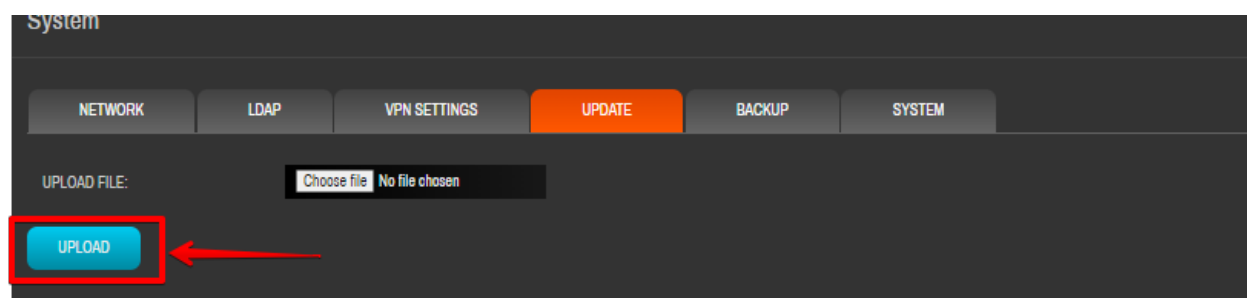
4.2.5. Update

It is possible to update the EYE-HD firmware via the web interface.

Click on **Choose File** to choose a file from your system.

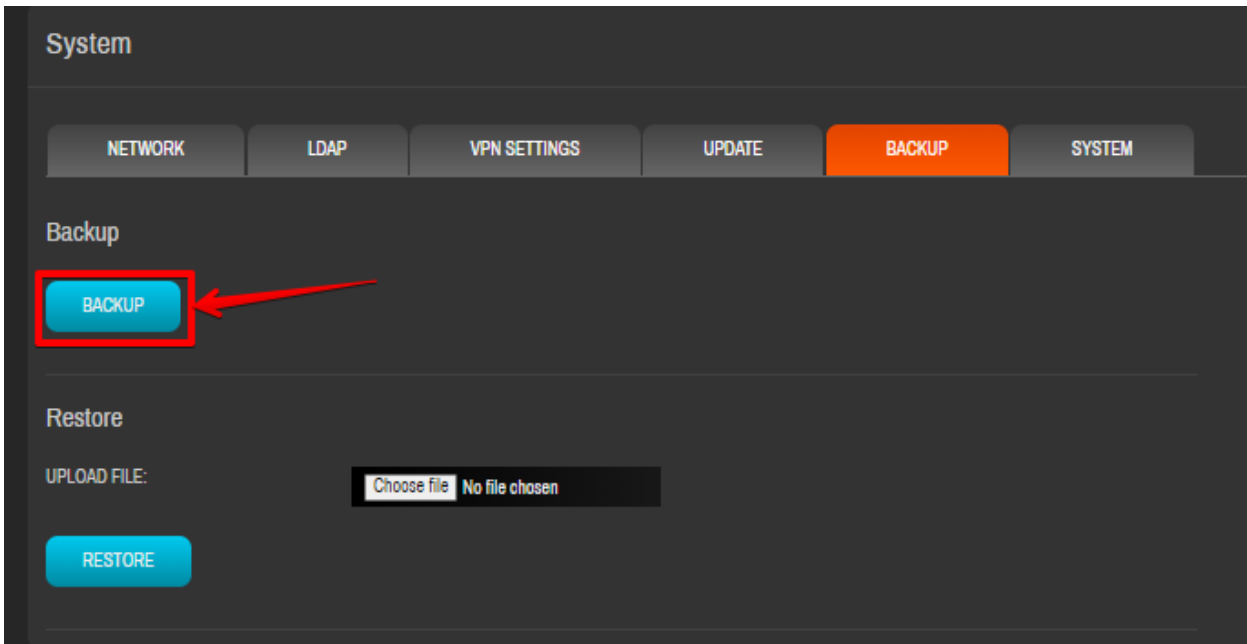


Now, click on the **UPDATE** button to push the update to all screens and follow any instructions.

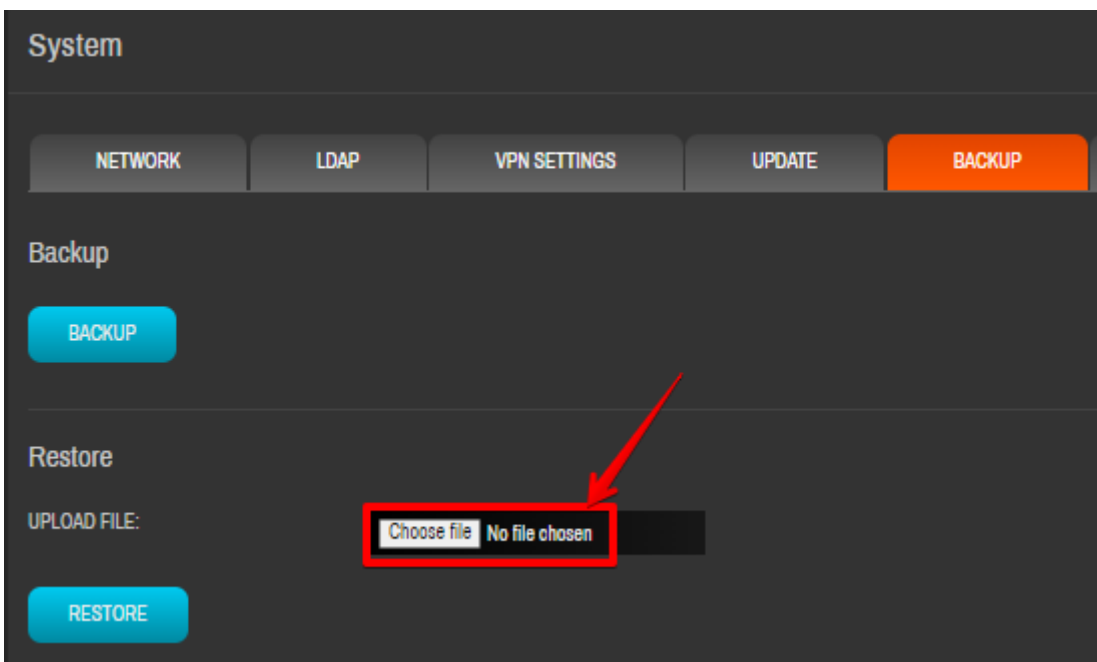


4.2.6. BACKUP

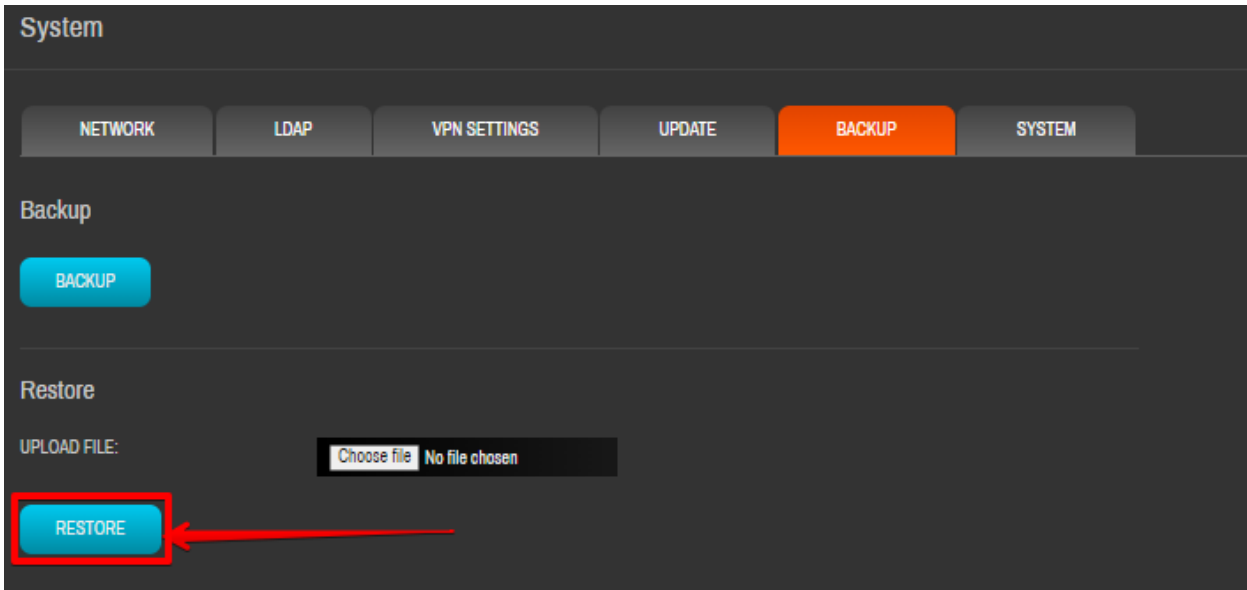
In the **Backup** section, click on the **BACKUP** button to back up all the data on your computer.



If you want to restore settings from a backup file, go to the **Restore** section and click **Choose File**. This will allow you to choose the backup file from your computer.

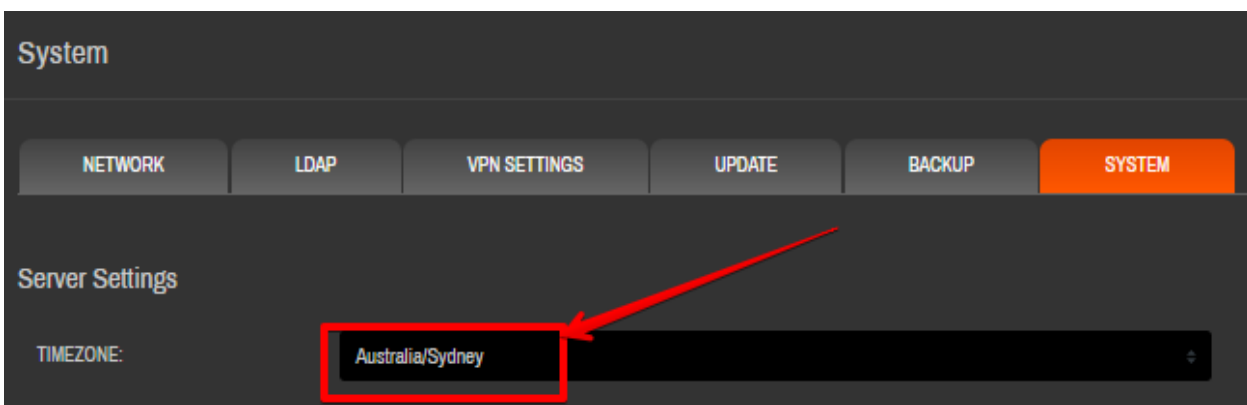


Click the **RESTORE** button to start the process.



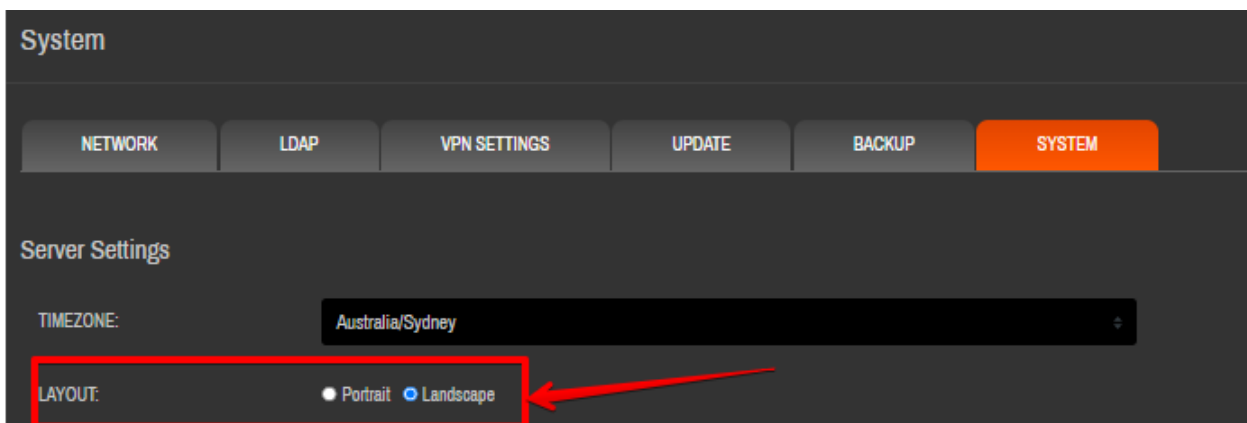
4.2.7. SYSTEM

You can set the timezone for all connected screens from the **TIMEZONE** field.



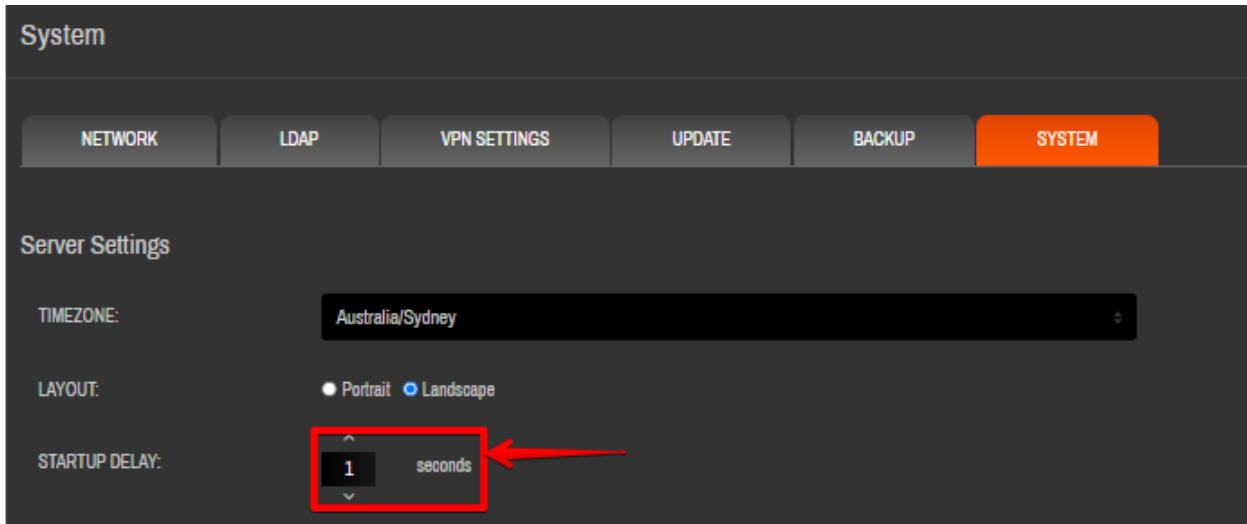
In the **LAYOUT** field, choose if you want your screens to be landscape or portrait by clicking on the respective radio button if one-word provisioning is not available.

If you are using one-word provisioning, the server settings will win.

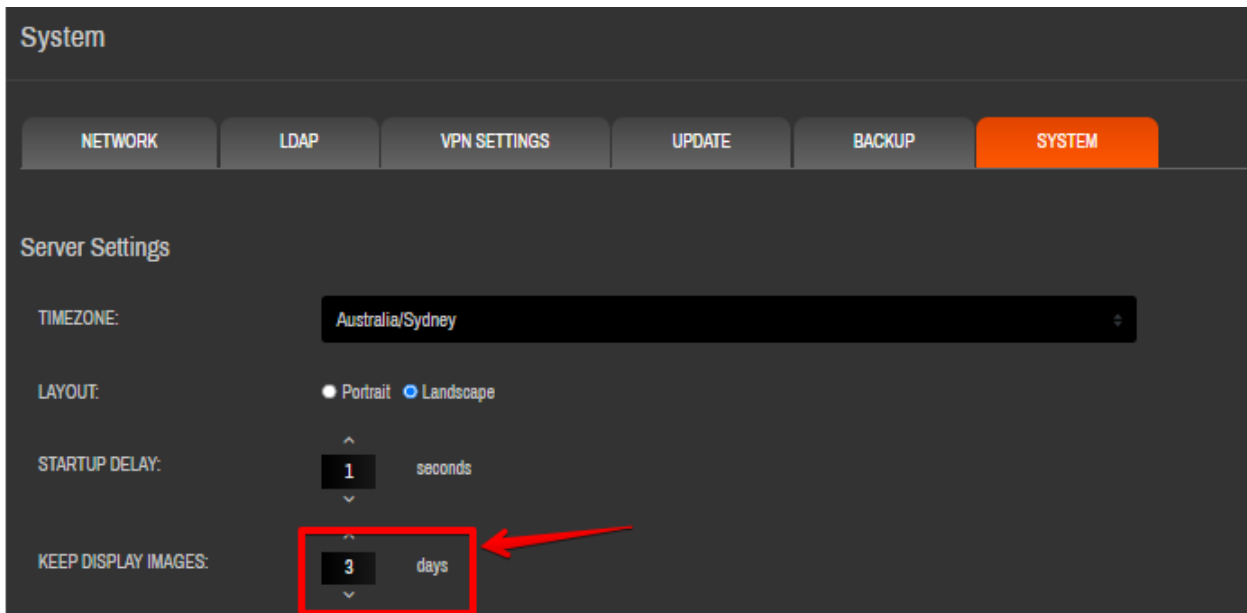


You can choose the startup delay by clicking on the upward and downward arrows. Please note that the startup delay is measured in seconds.

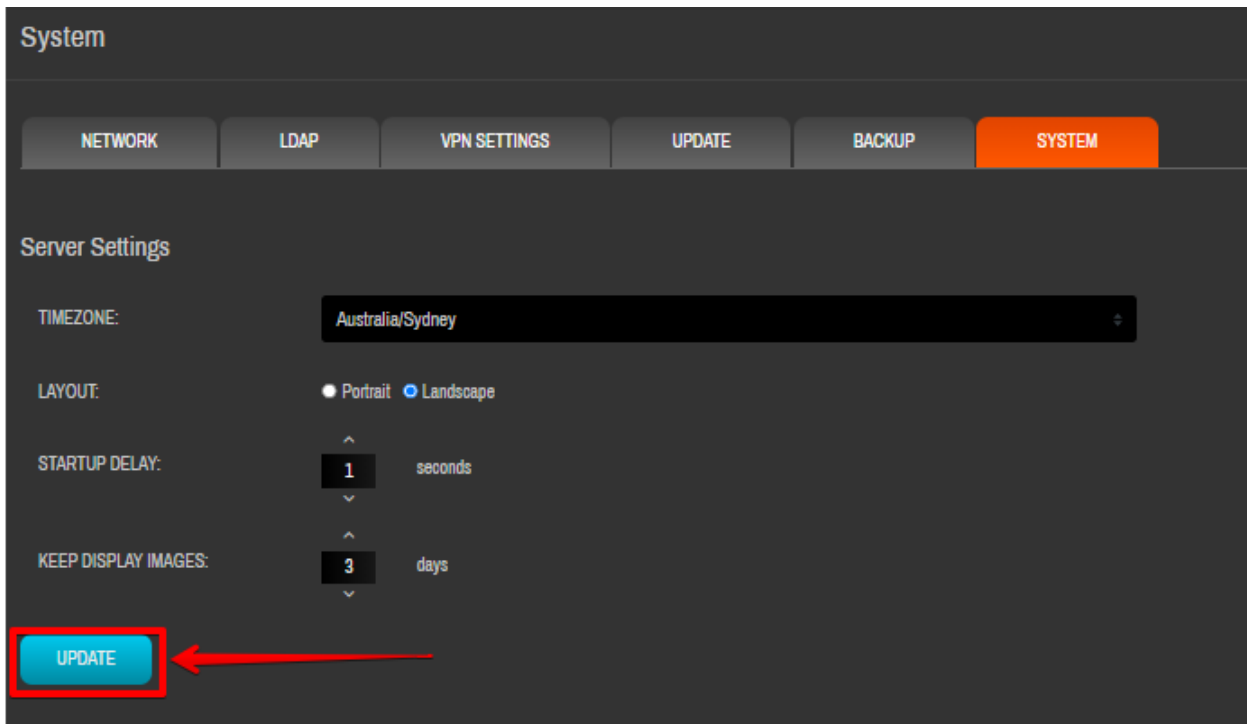
This is useful if you have the device behind WIFI or a modem which takes longer to start up than the Smart pi EYE-HD.



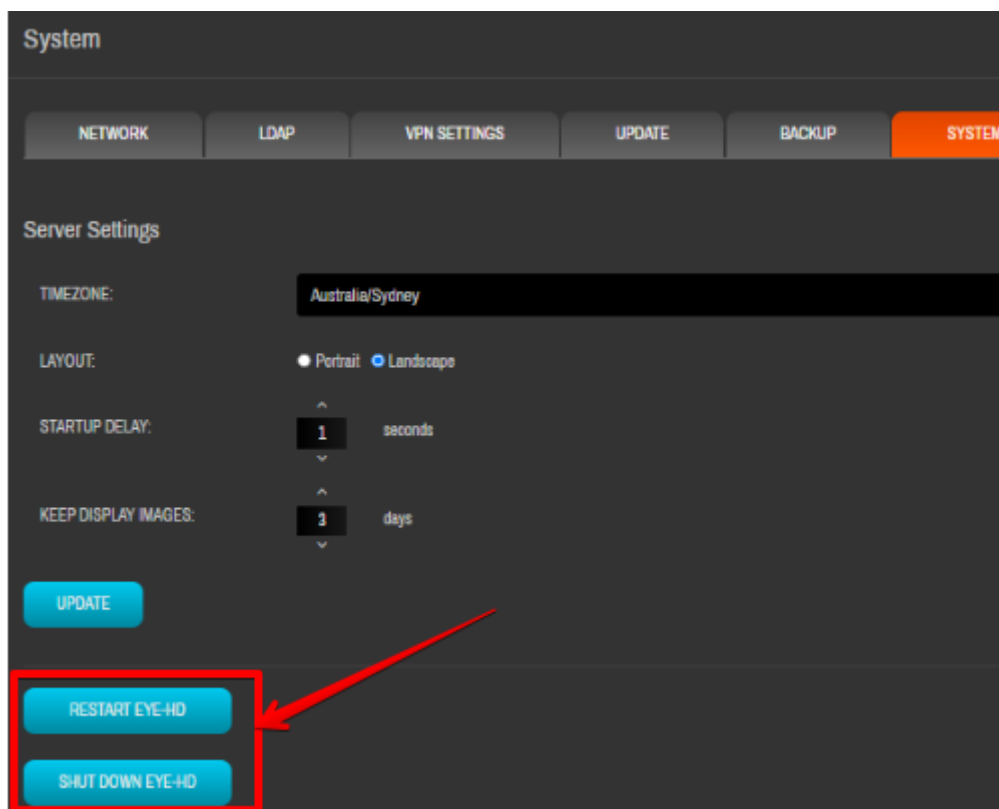
You can choose the number of days you want to display images on the screens by choosing the number in the [KEEP DISPLAY IMAGES](#) field.



Click on the **UPDATE** button to update to new settings.



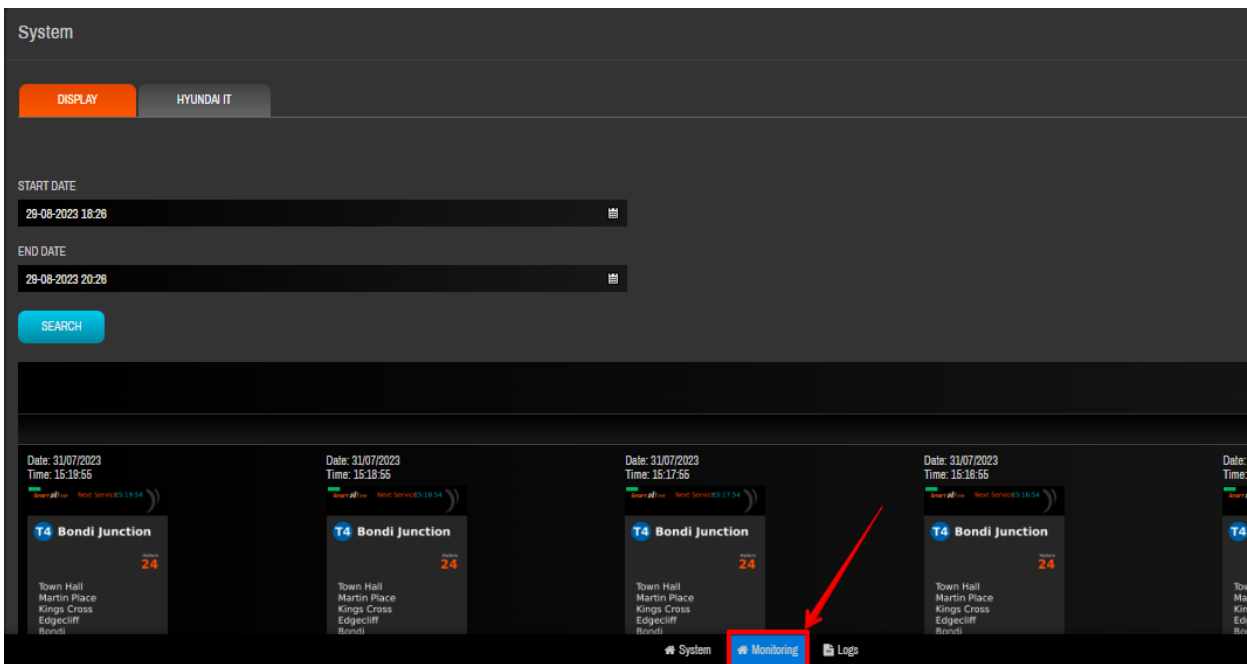
You can also restart or shutdown Smart pi EYE by clicking on the respective buttons.



Be careful when using shutdown as you can NOT remotely restart the unit.

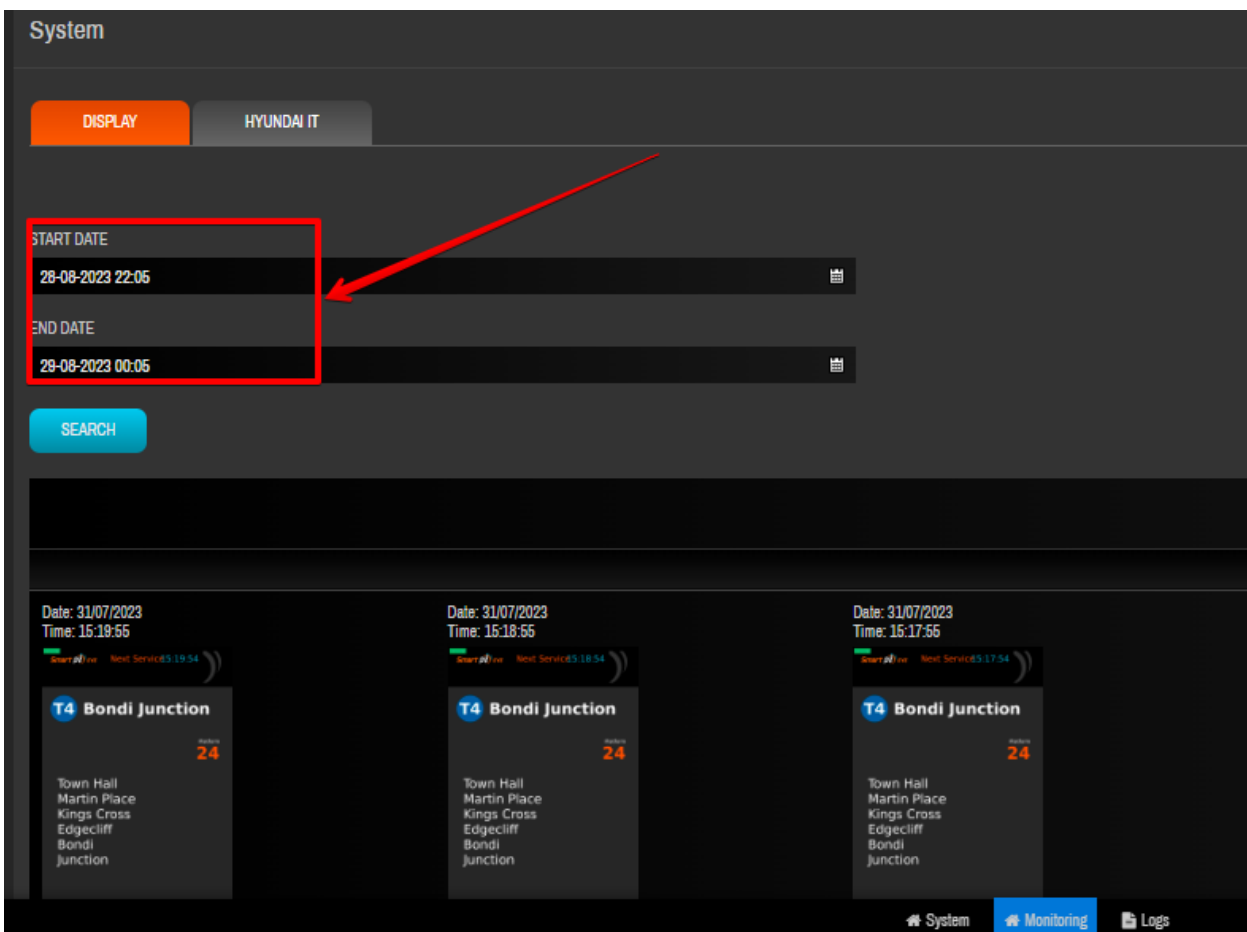
4.3. Monitoring Tab

This tab provides you insights into your screens.

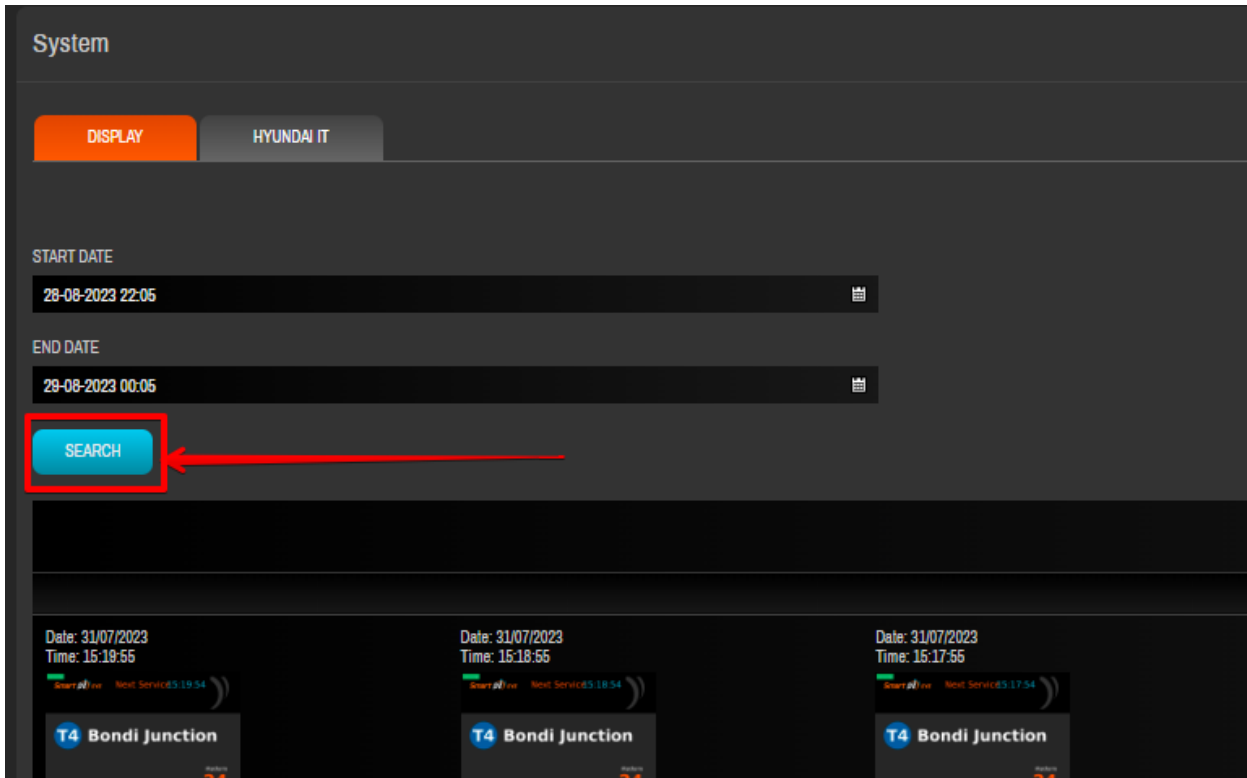


4.3.1. DISPLAY

This section allows you to filter campaigns running and screens used by these campaigns based on the date filters. You can choose the **Start Date** and **End Date** by clicking on the respective calendars.



Once you have entered the dates, click on the **SEARCH** button and you will see the results below.

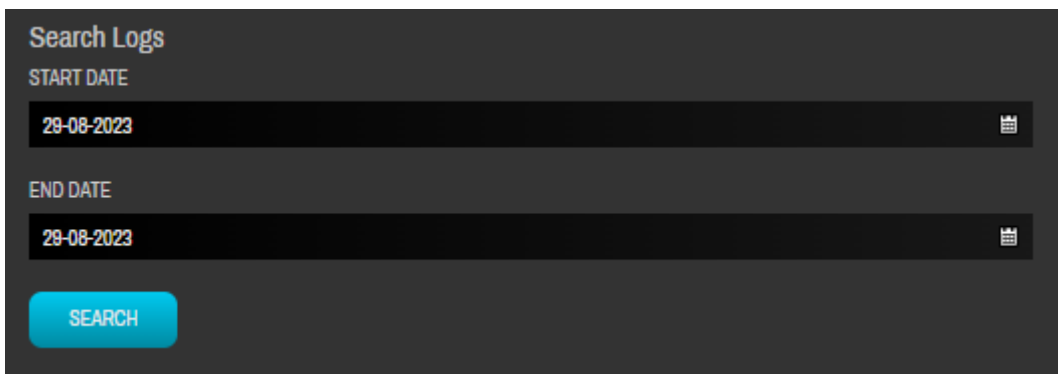


4.3.2. HYUNDAI IT

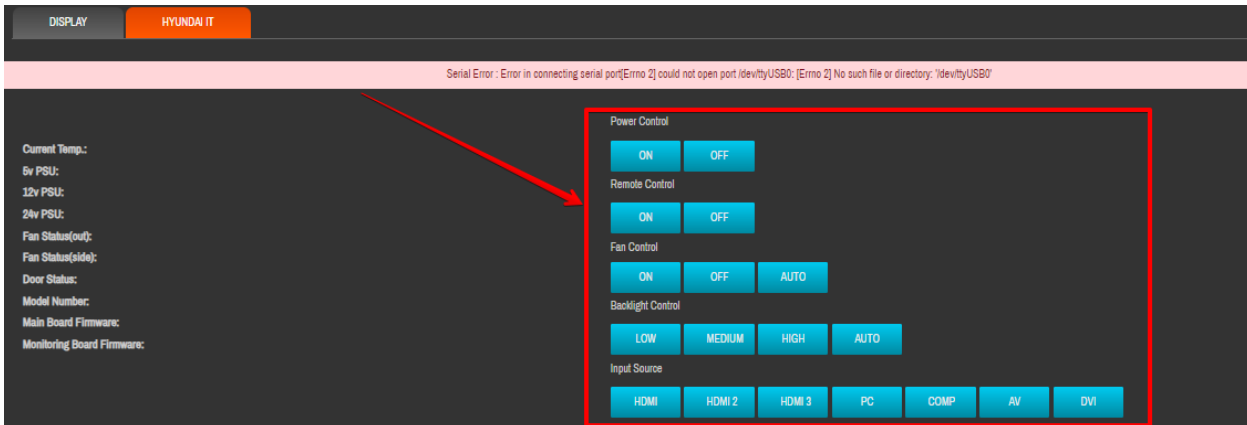
Click on the **HYUNDAI IT** tab from the top to access this section. This allows you to tap into more settings like brightness level, power control, remote control, contrast level, etc. when the unit is connected to a Hyundai IT display.

The Hyundai IT display is automatically detected, and settings will appear. An additional RS232 to USB cable is required to integrate to the Hyundai IT display.

To see logs from a particular date, use **START DATE** and **END DATE** calendars and tap **SEARCH**.



You can control other settings like power, remote, fan, backlight, and input source from this screen as well. While power and remote control can only be **ON** or **OFF**, other settings offer more options.



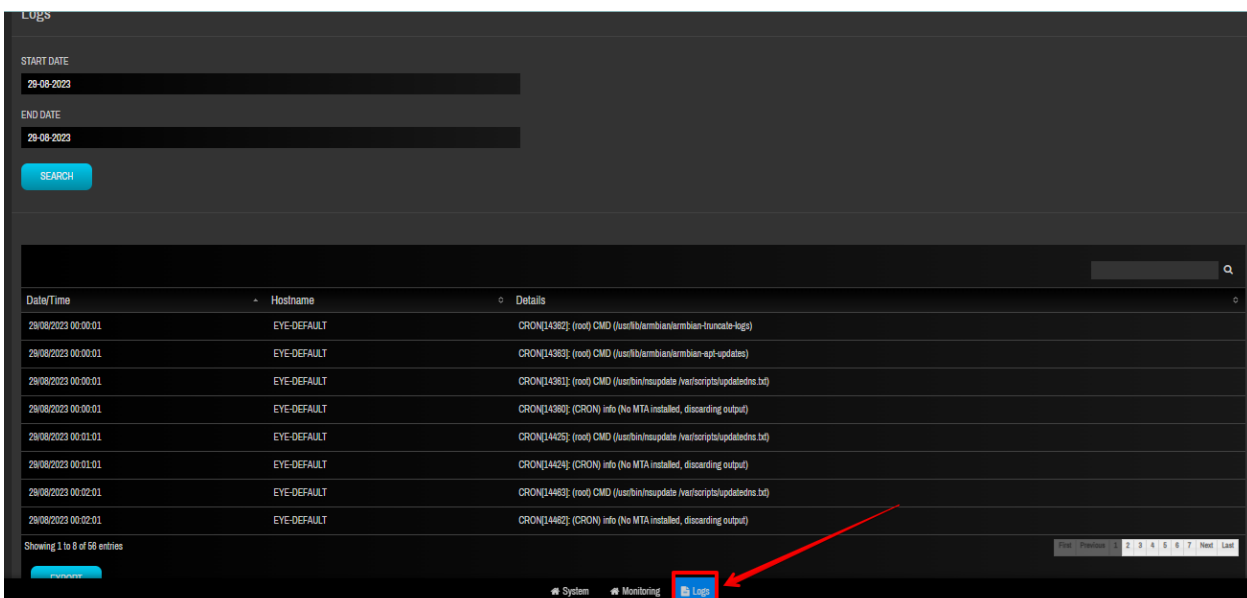
Set the **Brightness** and **Contrast** by dragging levels on the scale.



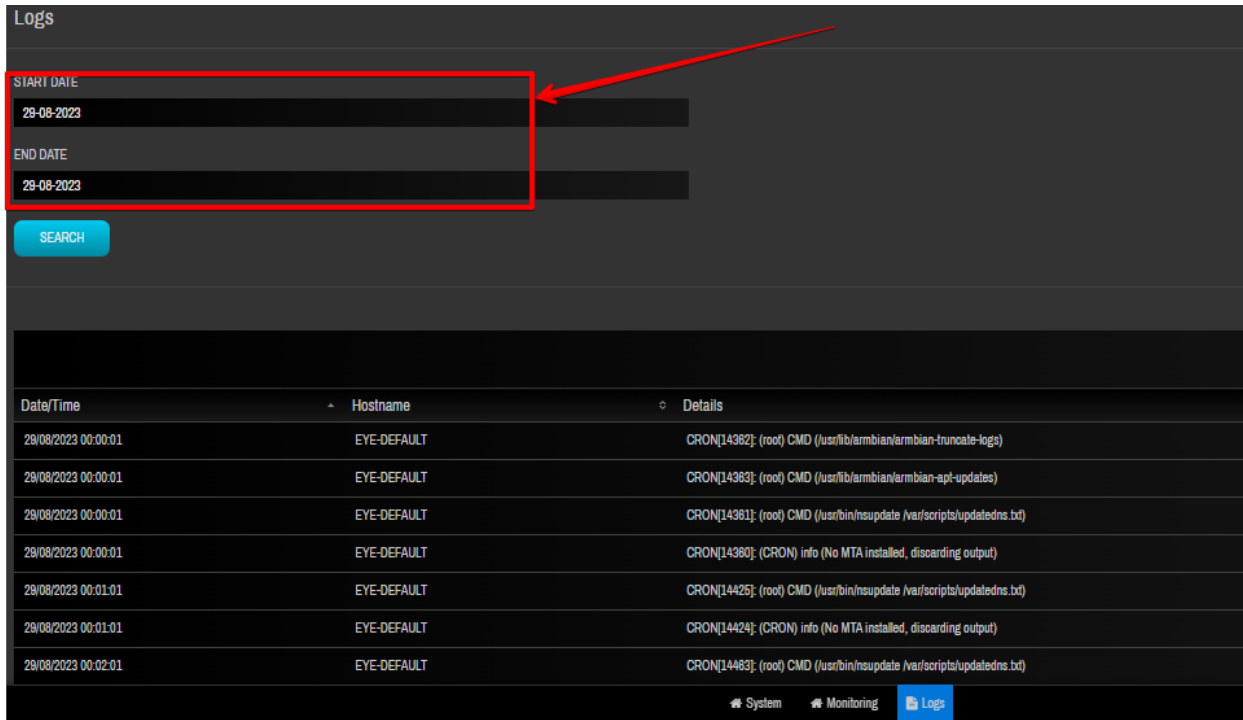
4.3.3. Logs Tab

It is possible to see the Smart pi EYE-HD system logs if requested by support.

Click **Logs** from the bottom of the screen to get started.



Choose the date range by selecting a **START DATE** and **END DATE** from the respective calendars.

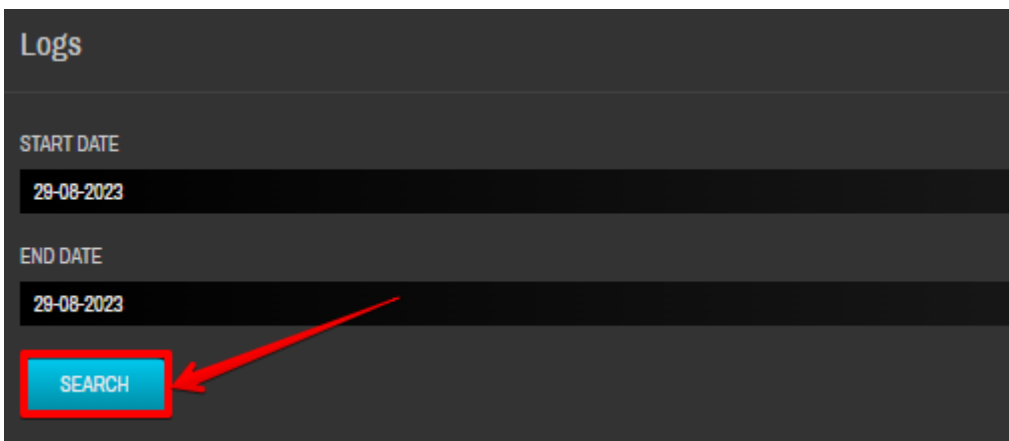


The screenshot shows the 'Logs' search interface. At the top, there are two input fields: 'START DATE' and 'END DATE', both containing the date '29-08-2023'. A red box highlights these fields, and a red arrow points to the 'START DATE' field. Below the date fields is a blue 'SEARCH' button. The search results are displayed in a table with the following columns: Date/Time, Hostname, and Details.

Date/Time	Hostname	Details
29/08/2023 00:00:01	EYE-DEFAULT	CRON[14382]: (root) CMD (/usr/lib/armbian/armbian-truncate-logs)
29/08/2023 00:00:01	EYE-DEFAULT	CRON[14383]: (root) CMD (/usr/lib/armbian/armbian-apt-updates)
29/08/2023 00:00:01	EYE-DEFAULT	CRON[14381]: (root) CMD (/usr/bin/insupdate /var/scripts/updatedns.txt)
29/08/2023 00:00:01	EYE-DEFAULT	CRON[14380]: (CRON) info (No MTA installed, discarding output)
29/08/2023 00:01:01	EYE-DEFAULT	CRON[14425]: (root) CMD (/usr/bin/insupdate /var/scripts/updatedns.txt)
29/08/2023 00:01:01	EYE-DEFAULT	CRON[14424]: (CRON) info (No MTA installed, discarding output)
29/08/2023 00:02:01	EYE-DEFAULT	CRON[14483]: (root) CMD (/usr/bin/insupdate /var/scripts/updatedns.txt)

At the bottom of the interface, there are navigation tabs for 'System', 'Monitoring', and 'Logs'.

Click on the **SEARCH** button pulls up all the relevant logs for you. The results show Date/Time, Hostname, and Details.



This screenshot shows the 'Logs' search interface, focusing on the date selection and search button. The 'START DATE' and 'END DATE' fields both contain '29-08-2023'. A red box highlights the blue 'SEARCH' button, and a red arrow points to it.

5. TECHNICAL DATA

Weight	500 Grams
Dimensions	145mm x 130mm x 27mm
Operating temperature range	0 – 70 Degrees Celsius
Power	Micro USB: 5V DC @ 500mA
Input	2 x GPI
Output	2 x GPO, 2 x Balanced Audio
Connectivity	RJ45 LAN 10/100/1000