

WAT-2400 User's Manual

Rev. 1.00

Waterc Co., Ltd.

2016/04/21

Revision Record

Rev.	Date	Changes	Remarks
1.00	April 21, 2016	-	Initial Release

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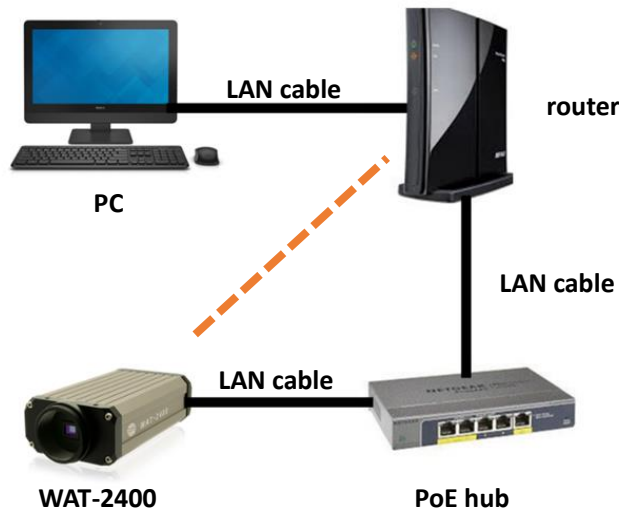
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1. Connection and power activation of the camera

The WAT-2400 has two power supply systems. The one is powered by +12VDC input plug on back panel of the camera, and the other is powered by PoE using a LAN connector.

Please feed by the one or the other of the way above and do not feed the both systems simultaneously.

The below figure is a connection example of the power supply by PoE hub. In addition, you need to have the power individually to the router and the PoE hub.



Connect the LAN cable of camera side to a PoE port of the PoE hub and connect the LAN cable of the router side to a normal LAN port.

If you want to power the camera using the AC power supplies, connect the camera and the router directly with exception of the PoE hub from the above. In a closed network configuration and you do not use the DHCP protocol, the router is also not required. In that case, connect the PC and the camera directly in LAN cable.

It takes about 20 seconds to fully boot the WAT-2400 from the power supply start.

2. Network settings

2.1. WAT-2400 network settings

The network default setting of the WAT-2400 is as follows;

IP Address:	192.168.0.200 (static)
Netmask:	255.255.255.0
Gateway:	192.168.0.1
DNS Server:	192.168.0.2

since the used camera has a possibility to have the changed settings. In that case please contact the administrator of the camera as there might need to change the viewed on PC or the camera network in accordance with the situation.

The network settings of the WAT-2400 can be changed in the setting change by the Web browser which will be described later.

If the network setting of the WAT-2400 is unclear, it is possible to initialize all the settings of the camera, including the network settings while using the reset button which will be described later.

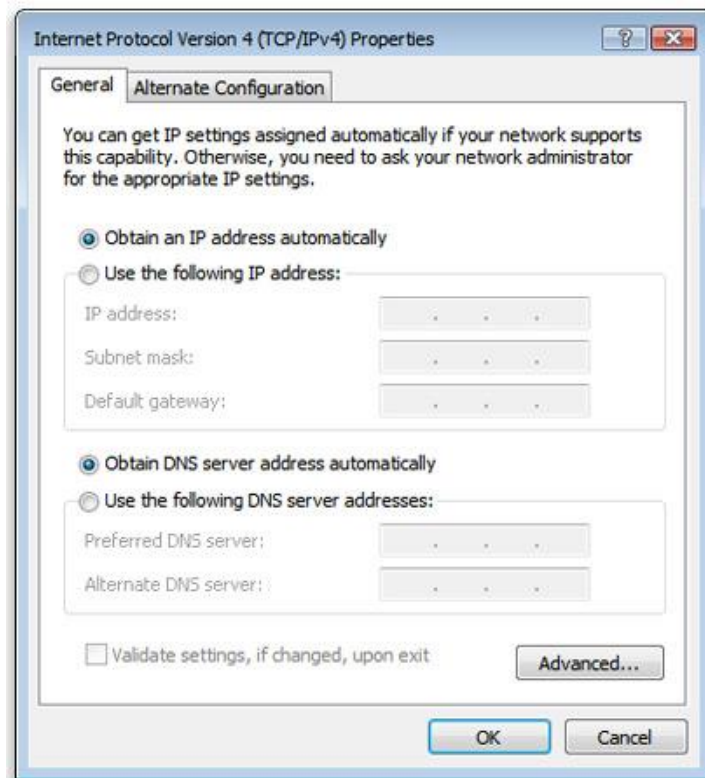
2.2. PC network settings

Set the PC network settings in order to accommodate WAT-2400's requirement.

PC network settings for a local area connection in Windows7 as follows;

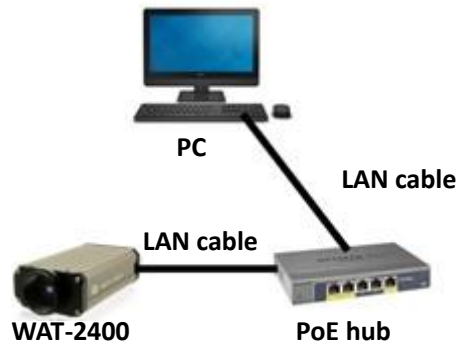
Control Panel>>Network and Internet>>Network and Sharing Center

>>Local Area Connection >>Properties>>Internet Protocol Version 4(TCP/IPv4) Properties

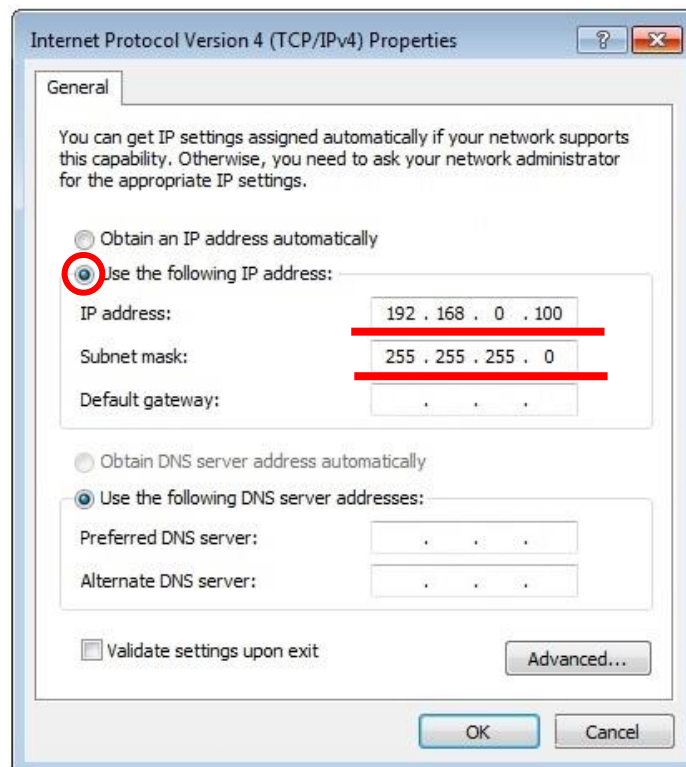


An example of PC network settings

Connect the WAT-2400 and your PC as shown in the below figure. And if the network setting of the camera is in default configuration (IP Address: 192.168.0.200 (static)), go through the following steps to set up the PC network settings.



Control Panel>>Network and Internet>>Network and Sharing Center
>>Local Area Connection >>Properties>>Internet Protocol Version 4(TCP/IPv4) Properties.
Input the values as follow, press the “OK” and close the property.

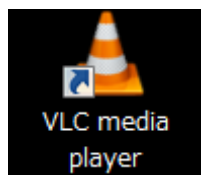


3. Checking the image from the camera

You could check the video image after the network settings are completed. This section describes the method in the case of viewing the image from the camera using the VLC media player as a typical way.

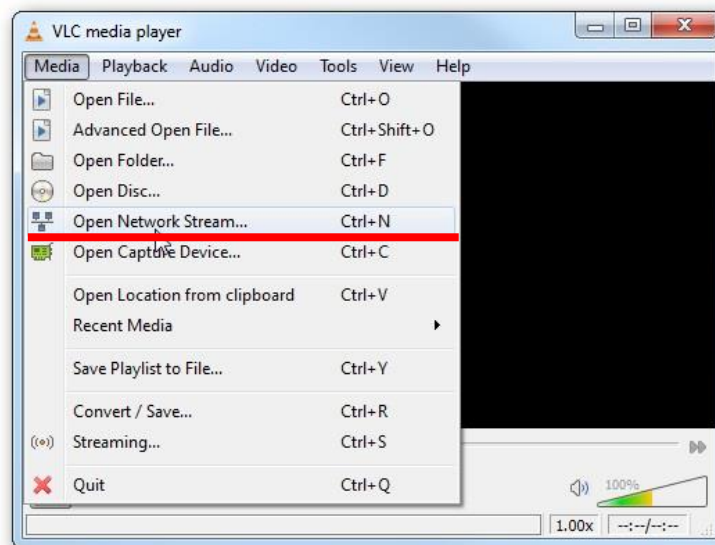
A case of VLC media player

Download the appropriate VCL which meets your PC from VideoLAN official download page (<https://www.videolan.org/vlc/index.html>) and install.



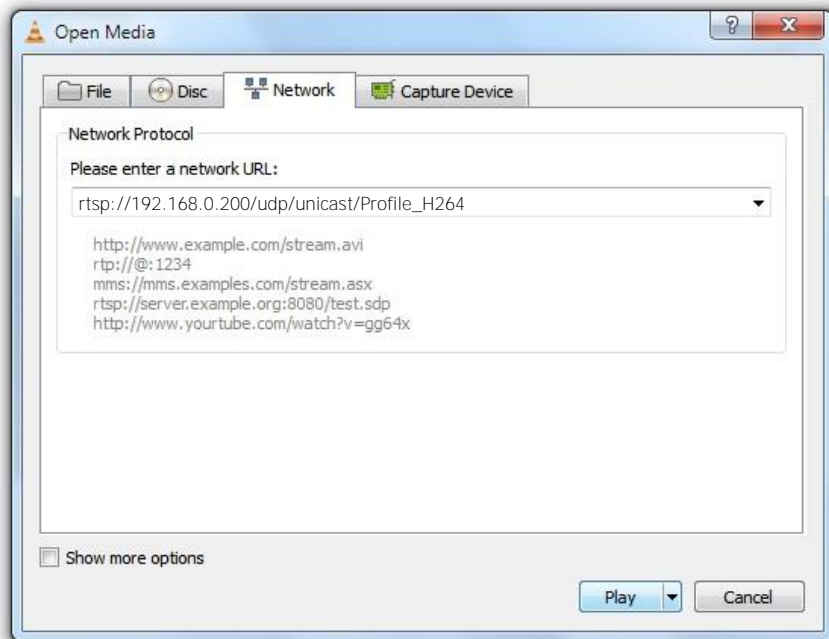
Open the VLC media player when the installation is complete.

Click on **Media <Open Network Stream** from the menu.

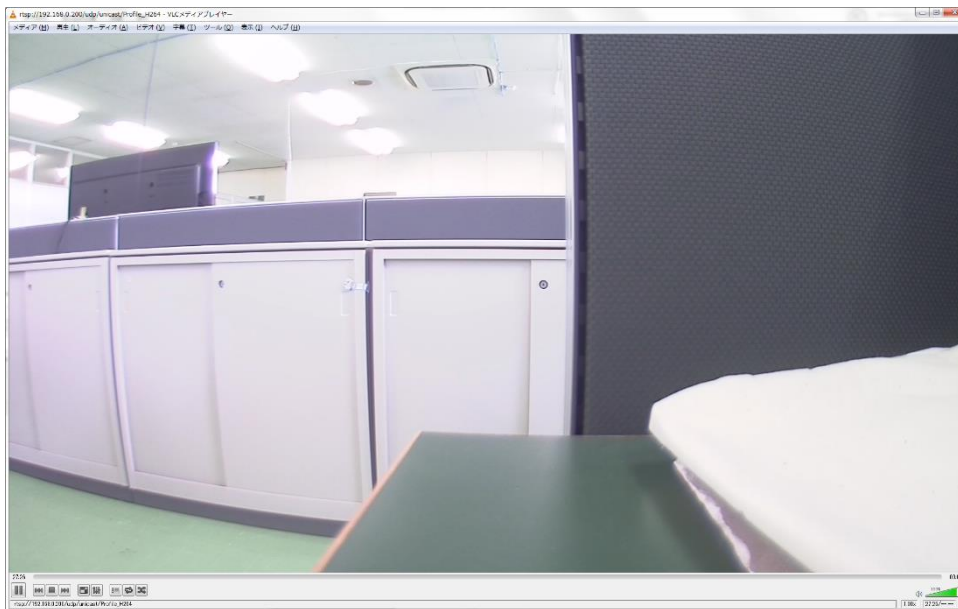


Paste your copied URL in the 'Network Protocol' box and click the play button. Wait till the video start streaming in your VLC.

`rtsp://"WAT-2400 IP Address"/udp/unicast/Profile_H264`
(Example: `rtsp://192.168.0.200/udp/unicast/Profile_H264`)



The network connections and settings work property, video starts to stream. Please check again the network settings if it does not start.



The screen might become grey during the viewing, in that case, please click the stop button in the lower left and click the play button again.

4. Changing the camera settings

4.1. Configuration changes from the Web browser (WAT-2400 System configuration)

The network settings of the WAT-2400 can be changed in the setting change by the Web browser. The Web browser must correspond to html5 and recommended web browser is Internet Explorer 11.

4.1.1. WAT-2400 System Configuration: Overview (top page)

Open your web browser and go to following address page.

[http://\"WAT-2400 IP Address\"/index.cgi](http://\)

(Example: <http://192.168.0.200/index.cgi>)

Network settings work properly, "WAT-2400 System Configuration" will be displayed as shown in the below figure. This page is the top page and includes a summary of the system.

WAT-2400 System Configuration

Overview System Camera

Network
IP Address: 192.168.0.200 (static)
MAC Address: 00:11:0C:15:47:24
Host name: wat-2400-0

Firmware
Dist: watec-dist v1.00 (Watec/WAT-2400)
Kernel: 3.4-at16

- **Network:**
IP address, MAC address and Host name of the WAT-2400 will be displayed.
- **Firmware:**
Firmware's userland and the information about the version of the kernel will be displayed.

There are 2 major menu and 5 submenu apart from the "Overview" in the WAT-2400 System Configurations. A description of each menu follows;

4.1.2. WAT-2400 System Configuration: System

Click on **System** from the menu and go to the page for updating the firmware and changing of network settings. At the first time connection, the authentication window will open such as shown in the below figure.



User name: admin

Password: admin

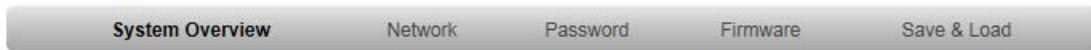
Enter the above and click the "OK" button. The user name and password can be changed in the password submenu which will be described later.

System has 5 submenu, System Overview, Network, Password, Firmware, Save & Load. A description of each submenu follows.

System Overview

Overview of the system will be displayed as same as top page.

WAT-2400 System Configuration



Network Info

IP Address 192.168.0.200 (static)
MAC Address 00:11:0C:15:47:24
Host name wat-2400-0
Traffic 8827879 packets received
21909483 packets sent
Zeroconf Active

Firmware

Version watec-dist v1.00 (Watec/WAT-2400)
Kernel 3.4-at16

Network

The current network settings of the WAT-2400 are displayed. At this page, you can change the following network settings;

- Switching of AUTO IP (DHCP) and STATIC IP
- Advanced settings for STATIC IP
- Changing the Hostname

WAT-2400 System Configuration

Overview	System	Camera
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System Overview	Network	Password	Firmware	Save & Load
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Network Configurations

AUTO IP (DHCP)

STATIC IP

Address	<input type="text" value="192.168.0.200"/>
Netmask	<input type="text" value="255.255.255.0"/>
Gateway	<input type="text" value="192.168.0.1"/> (optional)
DNS Server	<input type="text" value="192.168.0.2"/> (optional)

Hostname

WAT-2400 System Configuration version 1.00
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Enter the each item and click the “Update” button then network settings will be changed. Click the “Cancel” prior to clicking the “Update” then the settings will be before correction.

When the change of network settings is made, the below figure will be shown.
If you would like to change the network settings continuously, please access the top page of the WAT-2400 System Configuration again. In that case, video output is paused due to the change of the network settings.

WAT-2400 System Configuration

Network configurations were changed

There is a possibility that network configurations were changed.
System disconnected the network and reconnect.
Close this web page, and access to the top page of WAT-2400 System Configuration later.

Hostname: wat-2400-0
IP Address: auto
MAC address: 00:11:0C:15:47:24

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Back to the top page and the following message will be displayed in upper right in the window.

Configurations were changed, but not saved yet ->
System : [Save & Load](#)

As per above message, if you made any configuration changes not only in the network configuration, the changed configuration will not be saved and power-supply disconnection will make the change go back to the original unless you save the configuration to the flash ROM in the Save & Load page which will be described later.

Password

On this page, you can change the Username and Password to use for authentication when entering the System page of the WAT-2400 System Configuration.

WAT-2400 System Configuration

Overview **System** Camera

System Overview Network **Password** Firmware Save & Load

User and Password Details

Username	<input type="text" value="admin"/>
Current password	<input type="password"/>
New password	<input type="password"/>
Confirm new password	<input type="password"/>

- **Username:**
Enter the New user name
- **Current password:**
Enter the current password
- **New password:**
Enter the new password
- **Confirm new password:**
To confirm, enter the new password again.

Click the “Update” button and the change will be made with the information entered in.

When you change the settings, the confirmation page will be displayed in the same way of changing the network settings. If you would like to change the network settings continuously, please access the top page of the WAT-2400 System Configuration again.

Please note that when you made any configuration changes, the changed configuration will not be saved and power-supply disconnection will make the change go back to the original unless you save the configuration to the flash ROM in the Save & Load page

In addition to that, please be aware not to forget the new username and password, when you access the page and will be required authentication after you change the username and password.

Firmware

You can update the userland and kernel of the Linux which configure the systems of the WAT-2400 at this page. These updates will be made by downloading each image file to the WAT-2400 from our website via the internet. Therefore, the WAT-2400 must be connected to the internet when you update the firmware.

WAT-2400 System Configuration

Overview **System** Camera

System Overview Network Password **Firmware** Save & Load

Firmware updates

After finishing download of the image file of firmware, it would take a few minutes to complete update of the firmware.

Don't power off WAT-2400 until firmware update finishes.

If the power is turned off, there is a possibility that WAT-2400 can't be started.

System reboot is needed to reflect firmware update.

Get firmware options

Applications (Userland)



Edit

Update userland

Kernel



Edit

Update kernel

Current firmware download location: http://www.watec.co.jp/WAT-2400_FW/ change

Click the “Get firmware options” button once the WAT-2400 has been connected to the internet. The list of available firmware will be displayed in the drop-down list if there is not a problem with the connection.

Select the image file you would like to update from the list.

Click the “Update userland” button when you update the userland.

And click the “Update kernel” button when you update the kernel.

After you updated the firmware, the confirmation dialog will be displayed and click the OK button. And the update will begin. During the update the below page will be displayed.

WAT-2400 System Configuration

Updating Firmware

Don't power off WAT-2400 until firmware update finishes.
If the power is turned off, there is a possibility that WAT-2400 can't be started.

WAT-2400 System Configuration version 1.00
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Please do not disconnect the network or turn off the camera until the display of the page is finished. And the camera might not be able to reboot.

The update might takes about 10 minutes depending on the states network.

If an error message is displayed, please access the page from the top and see if the URL and the network are not problem. Then, please try to update again.

When the update is completed successfully and back to the original page, you can see the following message in upper right of window.

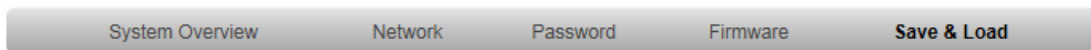
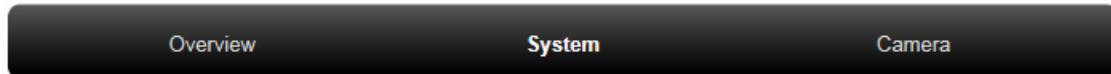
Firmware was updated, but not rebooted yet -> [System :](#)
[Save & Load](#)

As per the message, please be aware that the updated F/W will not be adapted to the camera unless you reboot the camera from the “Save & Load” page which will be described later.

Save & Load

You can save and readout of the system configuration, initialize the setting and reboot the camera at this page.

WAT-2400 System Configuration

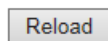


Save and Load System Configurations

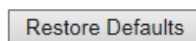
Save current system configurations into Flash ROM



Cancel temporary changes of system configurations and load configurations saved in Flash ROM

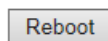


Discard all overwritten system configurations (need system reboot)



System Reboot

Reboot WAT-2400



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- **Save:**
Save the current settings to flash ROM
- **Reload:**
Discard current system configuration and change the settings back to the default stored in the flash ROM.
- **Restore Defaults:**
Discard current system configuration and change the settings back to the default of F/W write. Reboot the camera in order to reflect the change.
- **Reboot:**
Reboot the system.

4.1.3. WAT-2400 System Configuration: Camera

You can adjust the settings of the WAT-2400 such like the exposure, the brightness of the output image, the contrast and changing the output size in the page.

Exposure settings

You can change the settings for the exposure of the camera.

- Auto exposure mode

You can set the control mode of exposure. There are 4 modes as follows;

0	normal AE	Normal automatic exposure control
1	longtime AE	Take a longer exposure time to the normal AE which extending the frame.
2	AE hold	Hold the current exposure setting
3	manual	Manual exposure control

The default setting is "0".

- Exposure

Change the exposure mode to "3" (manual) and you can set the exposure time of the camera manually.

The exposure time will be approximately as follows;

"Input value" / 10,000 [s] (The range of values: 1 ~ 2,000)

The default setting is "100".

- Gain

Change the exposure mode to "3" (manual) and you can set the gain value of the camera manually.

In the range of 0 ~ 66 [dB], you can set in 3dB steps.

The default setting is "0".

- Flickerless mode

Change the exposure mode to “1” or “2” and you can change the Flickerless mode of the camera. There are 6 modes of FL control as follows;

0	auto FL	Automatic Flickerless mode
1	50Hz to auto FL	Change to auto FL mode after starting with 50Hz FL mode.
2	60Hz to auto FL	Change to auto FL mode after starting with 60Hz FL mode.
3	50Hz fixed FL	50HzFL fixed mode
4	60Hz fixed FL	60HzFL fixed mode
5	FL off	Off the FL function

The default setting is "3".

White Balance Settings

Switch the white balance mode

- White Balance mode
- Switch the white balance control mode. There are 4 modes as follows;

0	ATW	Follow the change of color temperature of the object and adjust the white balance
1	full open	Draw the wider range of colors to white.
2	AWB hold	Stop the AWB operation and hold the white balance gain value
3	MWB	Set the target value of the white balance to a specific color temperature along the black body emission curve.

The default setting is "0".

White Balance color temperature

Change the white balance mode to “3” and you can set target value of the white balance manually.

In the range of [0 (1500K) ~ 60 (10500K)], you switch the set value. Correspondence between the setting value and the color temperature is shown in the table below.

Set value	Color temperature [K]	Set value	Color temperature [K]	Set value	Color temperature [K]
0	1500	21	2143	42	3750
1	1522	22	2188	43	3889
2	1544	23	2234	44	4038
3	1567	24	2283	45	4200
4	1691	25	2333	46	4375
5	1615	26	2386	47	4565
6	1641	27	2442	48	4773
7	1667	28	2500	49	5000
8	1694	29	2561	50	5250
9	1721	30	2625	51	5526
10	1750	31	2692	52	5833
11	1780	32	2763	53	6176
12	1810	33	2838	54	6562
13	1842	34	2917	55	7000
14	1875	35	3000	56	7500
15	1909	36	3088	57	8077
16	1944	37	3182	58	8750
17	1981	38	3281	59	9545
18	2019	39	3387	60	10500
19	2059	40	3500		
20	2100	41	3621		

The default setting is "41".

Image settings

Changing the settings for the adjustment of the image

- **Brightness**
You can set the brightness of the image. The brightness will increase following the increased set value.
In the range of [0 ~ 255], you switch the set value. The default setting is "0".
- **Contrast**
You can set the contrast of the image. The contrast will increase following the increased set value.
In the range of [0 ~ 255], you switch the set value. The default setting is "128".
- **Saturation**
You can set the saturation of the image. The saturation will increase following the increased set value.
In the range of [0 ~ 255], you switch the set value. The default setting is "128".
- **Hue**
You can set the hue of the image
In the range of [-128 ~127], you switch the set value. The default setting is "0".
- **Aperture**
You can set the enhancement of the outline(edge) of the image. The enhancement will increase following the increased set value. In the range of [0 ~ 255], you switch the set value. The default setting is "64".

Video output settings

Changing the settings for the adjustment of output size.

- **Video output mode**
You can set the video output size from following 2 output sizes.

0	FHD1080p	1920 * 1080 30p
1	HD720p	1280 * 720 30p

The default setting is "0"

When you change the items, the output of video will pause and the camera will restart after a few seconds.

- Test pattern

Output the test pattern (color bar signal)

0	off	Normal Image
1	on	Output the test pattern

The default setting is "0".

After changing configuration values of each item described above with the slider or text box, by clicking the “Update” button, the change will be reflected.

Once the “Default” button is clicked, the entire camera settings to this page will return to the default configuration. At the same time, the output size of the image also will be changed, therefore the output of video will pause.

Please make sure to save to the flash ROM in the Save & Load page if you have changed any settings, otherwise the changed settings will not be saved and be back to the original settings when there is power-supply disconnection.

4.2. Setting initialization by the reset button

WAT-2400 has the reset button on the back of the camera. When the button is pressed continuously for about 10 seconds while using a thin rod into the camera on operation, all the settings such as network settings and camera settings can be returned to the default configuration while WAT-2400 will automatically restart when the setting initialization is completed.

