

Highway LPR IP camera

User manual



1. Introduction

The camera adopts 2.1 Mega Pixel 1/2.8" SONY Exmor CMOS progressive scan sensor, featured WDR, low illumination, high definition. Special LPR technology applied: Highlight compression(HLC) adjustable, multi-section shutter speeds, LED illuminators brightness adjustable, AGC adjustable, WDR ON/FF, 3D-DNR, digital display setting, automatic snapshot and FTP upload, input linkage and output linkage, etc.

Easy setting: no need professionals, no need client software. BNC video output on control board for connection with a monitor. Manual setting all the function on control board inside camera. Connect NVR or computer, playback video, pause and see license plates clearly.

Applicable in: highway, or freeway, city road, country road, entrance/exit of community, school, hospital, industrial park, parking lot or garage, toll gate, etc. Surveillance place

2. Technical Parameter

Model No.		CSK-7220CN
Video	sensor	1/2.8 " SONY 2.1 Mega pixel Exmor progressive CMOS sensor
	Resolution max.	Full HD/1080P(1920x1080) + Full D1
	Min. illumination	color: 0.05Lux at F1.2 / LED lights ON: 0.001Lux at F1.2
	WDR	Y
	video codec	H.264 Main Profile @ Level 4.1 / Motion JPEG
	streams	FHD/1080P + Full D1 + CVBS
	Frame rate	1-25fps/s (1920*1080、1280*960、1280*720)
	video stream	H.264& M-JPEG video stream: video out multichannel video at max. Resolution. Frame rate and video steam adjustable, H.264 support VBR/CBR

	16: 9 display	support
	3D DNR	Y
	ROI	Y
	lens	f= 6mm/8mm/12/16 /25mm 3MP fixed lens optional
network	Network port	1 RJ45, 10/100M self adaptive Ethernet port, 1 BNC, 1 power supply port
	network protocol	IPv4, TCP/IP, UDP, HTTP, DHCP, RTP/RTCP/RTSP, FTP, UPnP, DDNS, NTP, IGMP, ICMP ,etc
	access agreement	WEB, SDK API, ONVIF
Storage	video	PC or NVR
	snapshot images	TF card (max.32G) and/or FTP upload
IE Web interface	Access from Web Browser	Camera live view, video recording, change video quality, motion detection, image snapshot, Privacy Mask, Text Overlay, etc.
Audio	Two-way audio	1 channel linear input, 1k Ω ; 1 channel linear output
safety	Built-in watchdog	In unusual circumstances auto reset the system to ensure the normal operation.
	remote reset	network remote reset
General	OS	Microsoft Windows XP/Windows 7 IE: Microsoft Internet Explorer 6.x or above
	Video out	1.0Vp-p,75 Ω
	Power supply	AC220V
	Operating temperature	-10 $^{\circ}$ C—50 $^{\circ}$ C
	N.W:	3.5KG
	Size:	L 390mm× W 140mm× H 143mm

3. Installation and quick setting

3.1. Connect computer and LPR camera with 75 Ω coaxial cable at BNC port.

3.2. Connect power supply, if the upper casing is open, the indicator light is on

3.3. When the image appears in the monitor, adjust the focus and Iris to get clear image. Surveillance area: max. 5-8 meters wide.

3.4. LCD display: current traffic mode and its parameters.

3.4.1. Current electronic shutter speed: AUTO, 30KM/H, 60KM/H, 90KM/H, 120KM/H, 150KM/H, 180KM/H

3.4.2 HLC (highlight compression) value, WDR ON/OFF, AGC, 3D DNR, auxiliary light luminance value, input linkage and re-set

3.4.2. HLC intensity: E1—E6;

3.4.3. AGC: AUTO, C1—C5

3.4.4. main LED fill-in light: 00-32;

3.4.5 WDR: OFF, AUTO, 32, 64, 96;

3.4.6. 3D-DNR: OFF

3.4.7. Secondary fill-in light: 00-32;

3.4.8 input linkage: OFF, ON

3.4.9. Reset: Y, N

Setting those parameter by a rocker switch: UP/DOWN, mode selection; LEFT/RIGHT: parameter setting.

3.5. HLC/ highlight compression intensity is adjustable auto shift from daytime setting mode to night setting mode. When the intensity comes to E6 at night, it is the utmost highlight inhibition, the image view is much darker. Be sure to set to a suitable intensity for best view license plates. Factory default: E1 in daytime, E5 at night.

3.6. Set shutter speeds according to vehicle's speed. If there's a blur of image, choose a higher speed mode. If the vehicle is not moving at all, choose the shutter speed mode: 60KM/H.

3.7. When main auxiliary lights is too strong or too weak, set LED brightness value from 00 to 32 by Rocker Switch. The bigger value, the brighter LED illuminator. But it has to be not too whitish license plates. Factory default: 00 in daytime. Adjustable. 20 at night. Adjustable.

If secondary LED fill-in light is necessary in a wide surveillance area, set it in the same way.

3.8. AGC setting. Enhance clearer image of license plates. Digital display: C1--C5, when it comes to C5, it is clearest image, but darker image. Factory default: C4.

3.9. WDR: It is recommended to set OFF in daytime. Otherwise, it'll be too much whitish image.

3.10. linkage input: "ON": the camera will be automatically at HLC mode at night when it has switch signal input (constant ON signal). The camera will not be HLC mode when there is no switch signal in 10 seconds. Thus, the live view image won't be that dark. Linkage input "OFF", Highlight compression mode shall be controlled by photo-resistor. Switch signal is always linkage with alarm linkage output.

3.11. Day/night setting shift: Set the daytime parameter of the camera when the switch in on DAY position. Set the nighttime parameter of the camera when the switch in on NIGHT position.

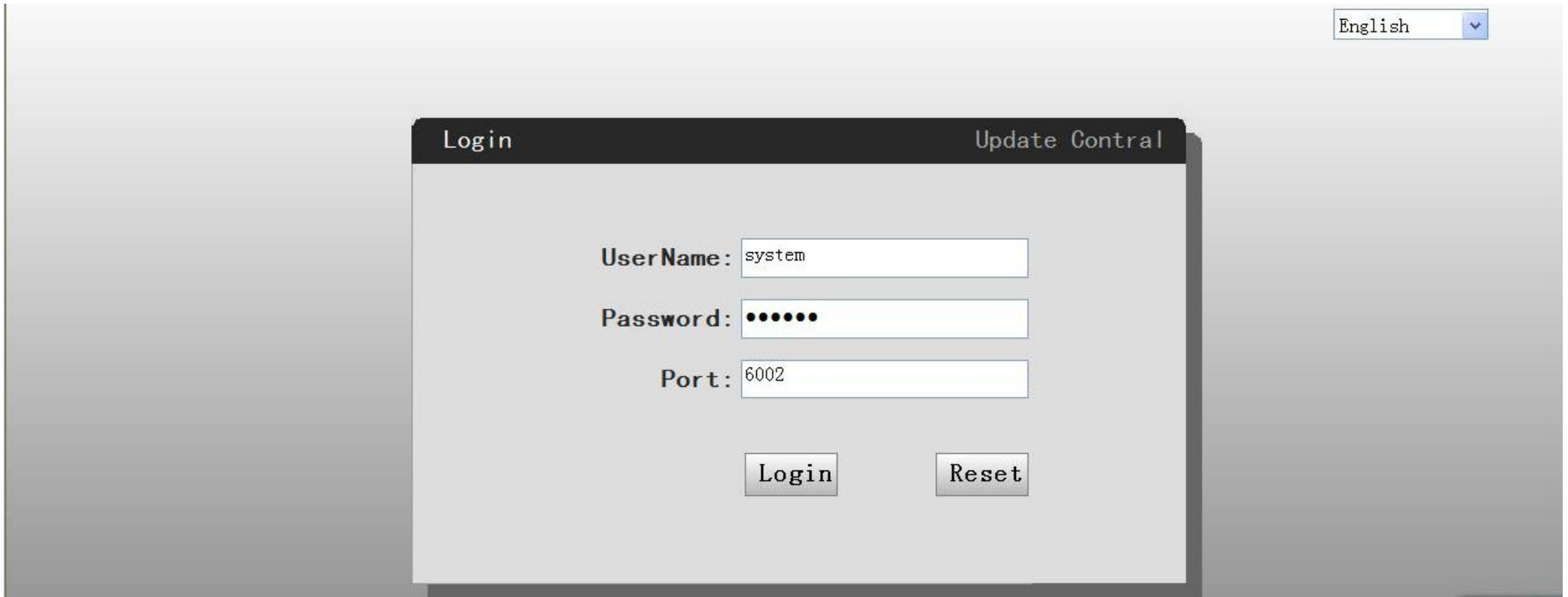
3.12. Connect PC or NVR via internet for live view or recording when finish setting.

3.13.Default IP:192.168.1.4, user name: :system, password: system IE port: 6002.

3.14.NVR access protocol: ONVIF, port: 8080

3.15 TF card storage, FTP upload and image capture setting

3.15.1. Log in camera's system by IE browser. IP:192.168.1.4, user name: system, password: system IE port: 6002.



English

Login Update Contral

UserName: system

Password: ●●●●●●

Port: 6002

Login Reset

3.15.2 Log in system, **for video recording**, FTP set, “ Configuration - Record - Ftp Set - Submit - Save” .Step 1-6.

Use an internal network IP address (same network with camera) as FTP server. If untick “Record the 2nd Stream”, video recording main stream.

User: system | 2014-06-06 14:25:17 [Click to update video plug-in.](#) Live View **Configuration** **Save** Exit

FTP Set

Enable FTP

Address: 192.168.1.88 Port: 21

UserName: aoker Password: *****

Send data time: 2 (minute) Path: \ Enable:

Mode: Schedule Always Record the 2nd Stream

Week: Friday Copy To: Everyday

Time	Start	End
Segment One	0 H 0 M	23 H 59 M
Segment Two	0 H 0 M	0 H 0 M
Segment Three	0 H 0 M	0 H 0 M
Segment Four	0 H 0 M	0 H 0 M

Type: All Day Timing

3.15.3. Log in system, **for snapshot image**, capture setting, “ Configuration - Record - Capture Set - Submit - Save” Step 1-7.

Use an internal network IP address (same network with camera) as FTP server.

Tick “Enable Second Stream”, snapshot image from second stream.

User: system | 2014-06-06 14:30:59 [Click to update video plug-in.](#) Live View **Configuration** **Save** Exit

Capture Set

Capture amount(1~5): 1 Interval: 1000 millisecond

Capture Handle: To the FTP server Enable Second Stream

Address: 192.168.1.88

Port: 21

UserName: aoker

Password: *****

5 types of capture handle: Store the snapshot images to TF card, or To the FTP server, or through alarm channel upload, or TF card and FTP upload, or TF card and upload through alarm channel.

To store images to TF card and FTP upload to a designated directory. Select it in down menu.

User: system | 2014-05-31 02:35:02 [Click to update video plug-in.](#) Live View Configuration Save Exit

Capture Set

Capture amount(1~5): Interval: millisecond

Capture Handle: Enable Second Stream

- To the FTP server
- Save to local hard disks
- To the FTP server
- Through the alarm channel upload
- Local preservation and FTP upload
- Local preservation and upload alarm channel

UserName: Password:

3.15.4 Log in system. AlarmIn setting, “Configuration - Alarm - Alarm Set -Submit -Save”. Step 1-8. For snapshot or Record or Alarm to the CMS.

User: system | 2014-06-03 17:33:27 [Click to update video plug-in.](#) Live View Configuration Save Exit

AlarmIn Set

Alarm Input Name Type

Week: Copy to:

Time	Start	End
Segment one	0 H 0 M	23 H 59 M
Segment two	0 H 0 M	0 H 0 M
Segment three	0 H 0 M	0 H 0 M
Segment four	0 H 0 M	0 H 0 M

Enable linkage action

Move to preset location Cruise Alarm to the CMS Snapshot Record

Trigger alarm output Relay

3.15.5 Log in system, format TF card. “Configuration -System - Disk Set - Format”. Step 1-4.

User: system | 2014-06-03 17:37:26 [Click to update video plug-in.](#) Live View **Configuration** Save Exit

Disk Management

Disk ID	Disk Type:	Total size:	Free size:	Status:
1	7	7460 M	7452 M	Ready

Format

32% 2.1K/s

1 2 3 4

3.15.6 Log in system. “Configuration - System - Advanced set - Restore “, restore camera if it is the 1st time setting. Step 1-3.

User: system | 2014-05-31 02:28:34 [Click to update video plug-in.](#) Live View Configuration Save Exit

Advance Maintenance

System time
Before the system time set server, please determine synchronous way. If you choose and the machine synchronous, please make sure you system time correct. If you choose and management center synchronization, please determine to management center network Settings page the Settings

Time Zone: (GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London

Current Time: 2014-5-30 (Friday) 19:31:9

Upgrade firmware

Please choose the compatible upgrade software. During the upgrade process, never power off the device, or will cause serious effect.Be patient! The upgrade process will take some time. After the upgrade, the server will reboot automatically. You need to choose the software which is compatible with the hardware to upgrade. During the upgrade process, please do not power off the device. It will take some time in this upgrade. After the upgrade, it will reboot automatically.

Other Maintenance

Save the modified parameters before you quit.

Click to recovery factory default settings.**Need to restart your device.**

Click to reboot the device.

1 2 3

3.15.8 Snapshot images by Video Motion Detection. It is for test purpose.

Please be noted that snapshot by Motion Detection is much less accurate than by inductive loops, radar, etc. external trigger because of poor illumination at night.

Log in System. “ Live View - VMD - Alarming Schedule - Linkage Action - ClearZone- Re-size VMD area - Setup - Save “. Step 1-6.

(Alarming Schedule: Copy to “ Everyday” and Copy.)

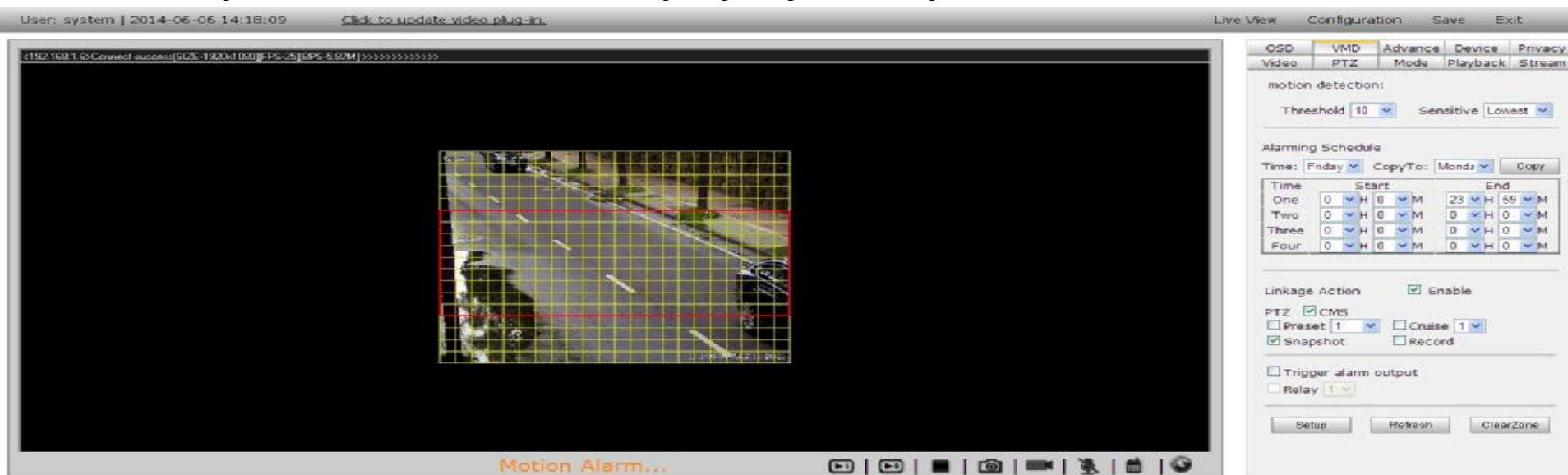
Threshold: less value, more sensitive.

The screenshot displays a video management system interface. At the top, the user is logged in as 'system' on '2014-06-03 10:37:14'. The interface includes a 'Live View' button (circled in red), a 'Configuration' tab, and a 'Save' button (circled in red). The main video feed shows a street scene with a blue car and a yellow grid overlay. A red rectangle (labeled '4') is drawn on the grid, indicating a motion detection zone. The configuration panel on the right is divided into several sections:

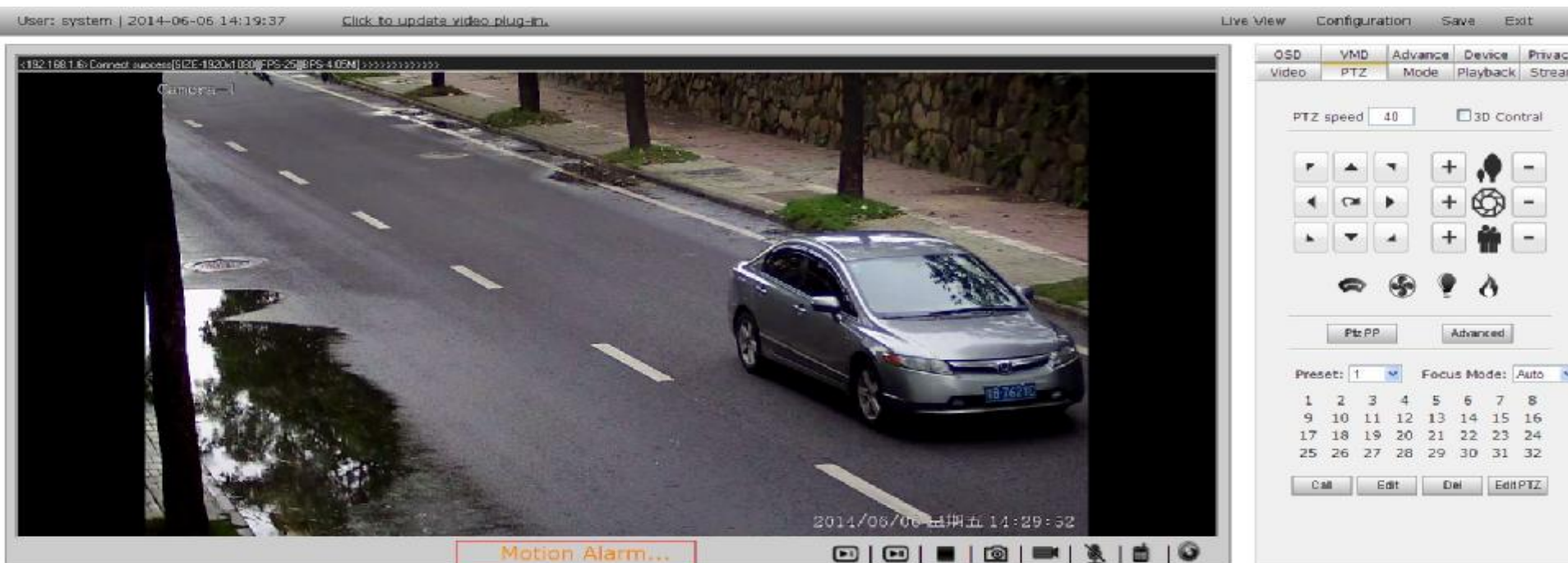
- OSD**: VMD (highlighted), Advance, Device, Privacy
- Video**: PTZ, Mode, Playback, Stream
- motion detection:** Threshold: 10, Sensitive: Lowest
- Alarming Schedule** (circled in red): Time: Tuesd, CopyTo: Mond (labeled '2'), Copy
- Linkage Action** (circled in red): Enable (checked), PTZ: CMS (checked), Preset: 1, Cruise: 1 (labeled '3'), Snapshot (checked), Record (unchecked)
- Trigger alarm output:** Relay: 1 (checked)
- Buttons:** Setup (circled in red and labeled '5'), Refresh, ClearZone

Time	Start	结束时间
One	0 H 0 M	23 H 59 M
Two	0 H 0 M	0 H 0 M
Three	0 H 0 M	0 H 0 M
Four	0 H 0 M	0 H 0 M

After finish VMD setting, it shows “Motion Alarm...” when the car is passing through the virtual square area.



When live viewing, it says “Motion Alarm...” when the car is passing through.



3.15.9 If you prefer **MJPEG as second video stream**, setting from “Live view - Stream - Stream Type - Second video stream setting- Setup - Save”. Step 1-6

User: system | 2014-06-04 12:38:33 [Click to update video plug-in](#)

Live View Configuration Save Exit

OSD VMD Advance Device Privacy

Video PTZ Mode Playback Stream

Video: 2

StreamType: 3 1080P(H.264)+D1(MJPEG)+C

D1StreamType: Image Use Size720*576

StreamEncrypt Standard Stream

First video stream setting

Frame rate: All Type: Video

Mode: CBR Quality: Best

BitRate: 4096 Kbps

Second video stream setting 4

Frame rate: 12 Type: Video

Mode: CBR Quality: Best

BitRate: 512 Kbps

IsImitate yes

31% 526K/s --°C

Setup Refresh

5

Remarks: When sub video stream is MJPEG, can't set higher frame rate of real time view. The camera can't proceed high stream. It will restore from time to time because of high stream.

3.15.10 There are various video stream type (main stream and sub stream) to meet customer's requirement.

“Live View - Stream - Stream Type - Setup - Save”.

User: system | 2014-06-04 12:47:26 [Click to update video plug-in.](#)

1 Live View Configuration Save Exit

OSD VMD Advance Device Privacy

Video PTZ Mode Playback Stream

Video: 2

3

StreamType: 1080P (H. 264)+D1 (MJPEG)+C

D1StreamType: 1080P (H. 264)+D1 (H. 264)

StreamEncrypt: 1080P (H. 264)+D1 (MJPEG)

1080P (H. 264)+CIF (H. 264)

1080P (H. 264)+D1 (H. 264)+CVBS

1080P (H. 264)+D1 (MJPEG)+CVBS

First video stream setting: 1080P (H. 264)+CIF (H. 264)+CVBS

1080P (MJPEG)+D1 (H. 264)

Frame rate: All 720P (H. 264)+720P (MJPEG)

Mode: CBR 720P (H. 264)+D1 (H. 264)

720P (H. 264)+CIF (H. 264)

BitRate: 4096 720P (H. 264)+D1 (H. 264)+CVBS

720P (H. 264)+CIF (H. 264)+CVBS

Second video stream setting

4

Frame rate: 12 Type: Video

Mode: CBR Quality: Best

BitRate: 512 Kbps

IsImitate: yes

5

31% 55K/s --°C

Setup Refresh

3.15.11 To apply NTSC TV system, setting from “Live view - Device - Format Type - Setup - Save”. Step 1-5

User: system | 2014-06-04 12:53:45 [Click to update video plug-in.](#) Live View Configuration Save

OSD VMD Advance Device Privacy
Video PTZ Mode Playback Stream

Device information:

Device Name: IPCAM

Format type: PAL

Device type: NTSC

Product SN: IPC2503142402885

MAC Address: 00-11-17-17-C4-A6

Software Version: 4.3.0.58Build20140512

Web Version: 1.0.0.65Build20140512

Firmware Version: 0.3

Channel Number: 1

Setup Refresh

30% 523K/s --°C

3.15.13 Manual snapshot images, “Live view” Press image icon to start capture . Find images at D:/Record/Image on your computer . It is for test purpose.

The screenshot displays a video management software interface. At the top, a status bar shows 'User: system | 2014-06-06 14:12:38' and a link 'Click to update video plugin'. On the right, there are menu options: 'Live view' (highlighted with a red box), 'Configuration', 'Save', and 'Exit'. The main area is a large video window showing a live feed of a silver van on a road. The video title is 'Camera 1'. In the top left of the video window, there is a log message: '(192.168.1.6)Connect success(SIZE:1920x1080)FPS:25(BPS:4.15M)'. At the bottom of the video window, a timestamp reads '2014/06/06 星期五 14:22:56'. Below the video window is a toolbar with icons for play, stop, full screen, a camera icon (highlighted with a red box), volume, and other controls. To the right of the video window is a control panel with tabs: 'OSD', 'VMD', 'Advance', 'Device', 'Privacy', 'Video', 'PTZ', 'Mode', 'Playback', and 'Stream'. The 'PTZ' tab is active. It features a 'PTZ speed' slider set to 40 and a '3D Control' checkbox. Below these are several rows of directional and function icons. At the bottom of the panel are buttons for 'Ptz PP' and 'Advanced'. Further down, there are dropdown menus for 'Preset: 1' and 'Focus Mode: Auto', followed by a grid of 32 preset numbers (1-32) and buttons for 'Call', 'Edit', 'Del', and 'EditPTZ'.

4. problem and solution

If there is any problem in the camera, please try to solve it as below..

problem	solution
License plate image is not clear enough or obscure	<ol style="list-style-type: none">1. If too wide surveillance area.2. Well focus3. LED illuminator has enough luminance.4. Suitable HLC intensity.5. Set suitable shutter speed for fast vehicle speed.
Tailing image	<ol style="list-style-type: none">1. Set suitable shutter speed2. NVR proceed too slowly. Replace an advanced NVR. etc.
Image whitish.	<ol style="list-style-type: none">1 HLC intensity, AGC value, LED brightness value is on best match.2. WDR function ON in the daytime.
No network	<ol style="list-style-type: none">1. Network is connected.2. Network protocol is correct.

5. Warranty: one year from factory shipment.