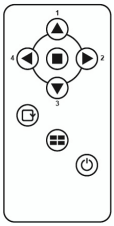
Trailer Vision™

Our Focus - Your Peace of Mind

Digi-Max2

Digital Wireless Camera System

Installation and User Manual



PLEASE READ CAREFULLY AND SAVE

This manual contains important information about this product's operation. If you are installing this product for others, you must leave this manual, or a copy, with the end user.

Version 1.0

CONTENTS

INTRODUCTION

KEY FEATURES:

- Digital Wireless Camera System, enabling up to 200m of secure video transmission
- Wireless Monitor with 7" LCD screen, video display from reversing etc. camera up to VGA@25FPS (single camera); or QVGA@20fps (multiple cameras)
- Supports up to 4 cameras, with revesing-camera set to CH1 (triggered)
- Wireless monitor support CH auto-switch functions, with a trigger cable connected between the monitor and the reversing light circuit; whenever reverse gear is selected the monitor will auto-switch to CH1 for rear view and switch back to previously displayed CH when reverse gear is disengaged
- Camera operates between 12V~48V, and the Monitor operates at 6V~48V. The system can be installed to any type of vehicle.
- Individual Camera Brightness Setting is available/selected via the monitor
- Video from each camera can be display by the monitor in normal mode or mirror mode (the "M" sign will be displayed when in mirror mode).
- Monitor supports IR remote control for remote/easy operation.

IMPORTANT SAFETY PRECAUTIONS

Damage caused by non-compliance with this User Manual will void the warranty. We will not assume any liability for damages to items, or persons caused by improper handling, or non-compliance with the safety notices! Any warranty claim will be null and void in such cases.

1. Do not drop, puncture or disassemble the camera, or monitor; otherwise the warranty will be voided.
2. Avoid all contact with water, and dry hands before using the monitor.
3. Never tug on the power cords.
4. Do not expose the monitor to high temperature, or leave it in direct sunlight. Doing so may damage the monitor, or cause temporary malfunction.
5. Use the monitor with care; only light pressure is needed to operate the buttons.
6. For your own safety, avoid using the camera, or power off when there is a storm, or lightning.
7. Remove the monitor power adapter during long periods between use.
8. Use only the accessories and power adapters supplied by the manufacturer.
9. To meet the regulations pertaining to parental responsibility, keep the devices out of the reach of infants.
10. Ensure that power cables, do not get crushed or damaged by sharp edges.

FCC Compliance Statement: This device complies with Part 15 of the FCC rules. Operation is subjected to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Products with CE Marking comply with EMC Directive (2004/108/EC); Low Voltage Directive (73/23/EEC); R&TTE(1999/5/EC); ROHS Directive (2011/65/EU) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms:
EMC: EN 301 489
LVD: EN 60950
Radio: EN 300 328

FCC/CE WARNING

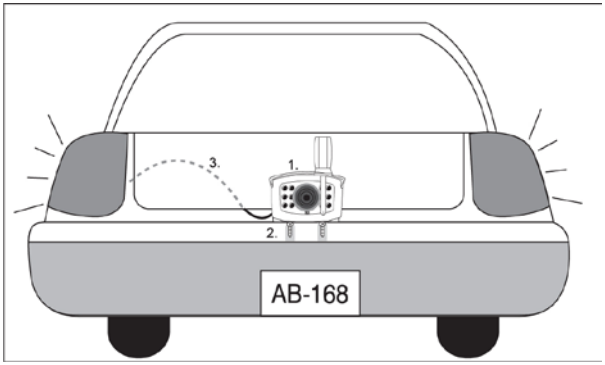
This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC rules and ETSI(EN) 300328. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: -Reorient or relocate the receiving antenna.-Move the equipment away from the receiver.-Plug the equipment into an outlet on a circuit different from that to which the receiver is connected.-Consult the dealer or an experienced radio/television technician for additional suggestions. You are cautioned that any change or modifications to the equipment not expressly approved by the party responsible for compliance could void your authority to operate such equipment.

DISPOSAL

If the camera system no longer functions or can no longer be repaired, it must be disposed of according to the valid statutory regulations. Disposal of spent batteries/accumulators: You are required by law (Battery Ordinance) to return all spent batteries and accumulators. Disposing of spent batteries/accumulators with common household waste is prohibited!

Batteries/accumulators that contain hazardous substances are marked with the symbols on the side. These symbols indicate that it is prohibited to dispose of these batteries/accumulators in the household waste. The abbreviations for the respective heavy metals are: Cd=cadmium, Hg=mercury, Pb=lead. You can return spent batteries and accumulators that can no longer be charged to the designated collection points in your community, outlets or wherever batteries or accumulators are sold. Following these instructions will allow you to fulfill the legal requirements and contribute to the protection of our environment!

INSTALLING THE CAMERA



With a fixed power source:

1. For reversing, choose a location at the rear of the vehicle/trailer, ideally in the middle and as high up as possible (to give the best view).
2. Screw the camera mounting bracket to the desired location. Attach the camera to the bracket, making sure the camera & bracket are secure.
3. Connect the power cable with 'U' shaped terminals to the power source (12V to 48V).Connect the red cable to the positive supply and the black cable to the negative supply.

> **Note**: If you are not sure which is the positive or negative supply, please try connecting one way and then try the other way, if the camera doesn't work. Connecting the camera the 'wrong way' will not damage the camera, it just won't operate while connected the wrong way.

4. Start the vehicle engine/switch on the lights etc. to power the camera. The camera power indicator will be illuminated when the camera is powered.

> **Note**: If automatic display of the rear camera is required, for a multi-camera system, the CH1 camera should be utilised for reversing and the trigger connection connected to the monitor (see below).

5. Turn on the monitor. The screen should display the image transmitted from the camera automatically. If it doesn't, please refer to the *Pairing Camera(s)* section to pair the camera with the monitor.

Using the trigger cable:

Utilising the trigger cable enables the Channel 1 camera to be automatically displayed when reverse gear etc. is engaged.

1. Connect the trigger cable ring-shaped connectors to the fuse/ electrical circuit of the reversing lights.
2. Connect the other end of the trigger cable to the monitor.
3. Turn on the monitor and select reverse gear (with ignition turned on).
4. The screen should display the image of the vehicle rear view automatically. If it doesn't, please refer to the 'Pairing Camera(s)' section, to pair the camera to the monitor.

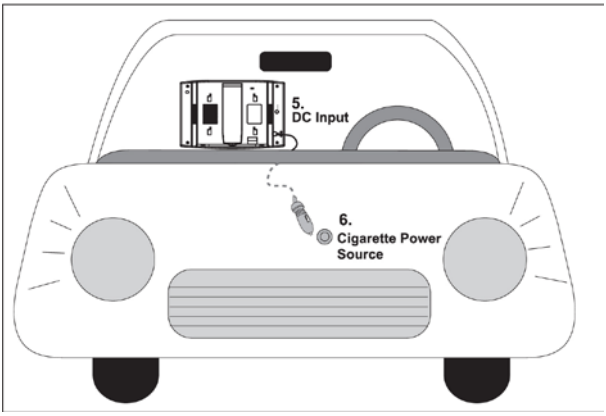
Note: If [NO SIGNAL] is displayed on the monitor, at any time while reversing, immediately stop the vehicle, until the image is displayed, or it is safe to continue.

With battery pack (available separately):

1. Attach the camera to the battery.
2. Fix the camera and the battery to the vehicle.
3. Press the power button, on the battery pack, to power the camera.

INSTALLING THE MONITOR

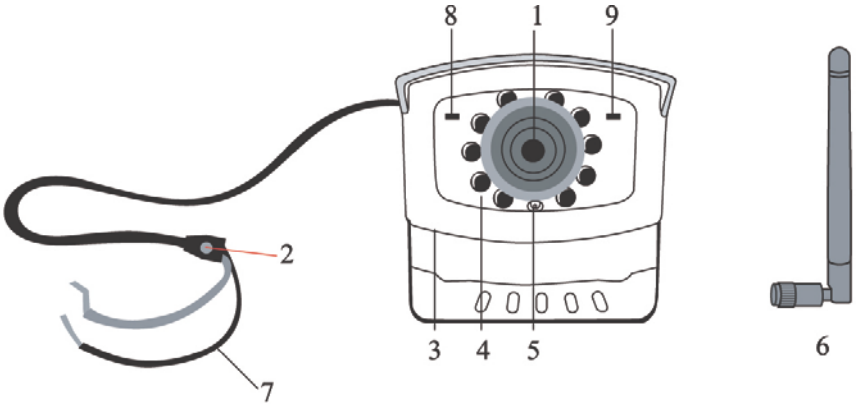
1. Screw the antenna to the cconnector at the top of the monitor.
2. Secure the windscreen mount to the rear of the monitor (a dashboard mount is also available, not included).
3. Secure the suction mount to the windscreen, ideally resting the base of the monitor on the vehicle dashboard.
4. Adjust the windscreen mount arm to achieve the desired viewing angle (the arm is extremely stiff, but does adjust).
5. Connect the cigarette adaptor to the DC power jack of the LCD monitor.



IMPORTANT: ONLY use the adaptor provided in the package.

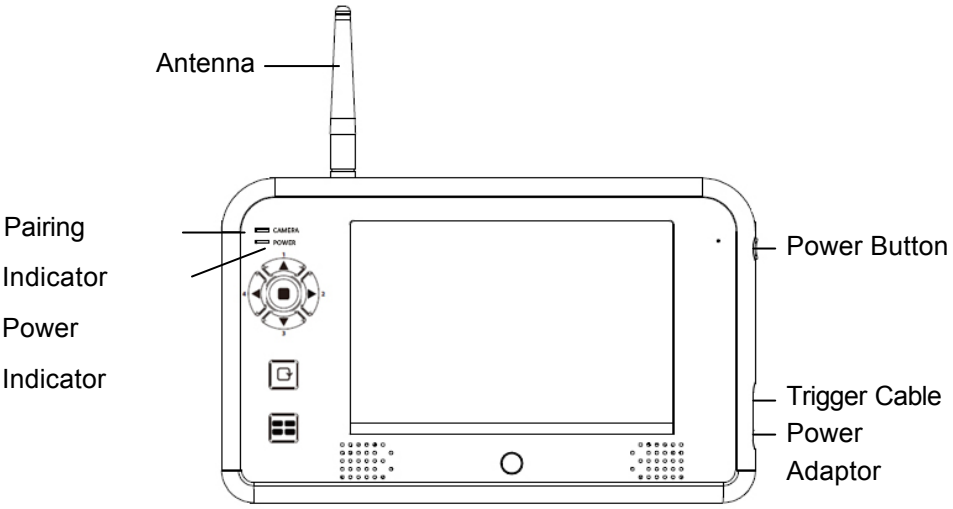
7. Plug the power unit into the cigarette power source, turn on the ignition and press the Power button to turn on the monitor.
8. Position the antenna in an upright orientation to achieve the best reception.

GETTING TO KNOW THE CAMERA

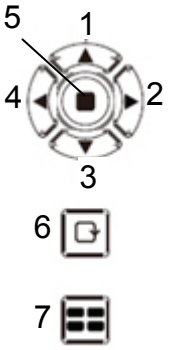
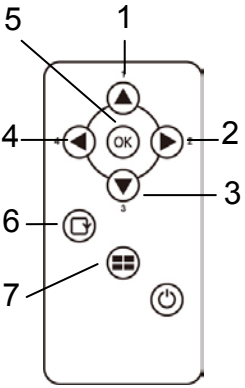


1. Camera Lens
2. Pairing Button
3. Mounting Bracket
4. IR LEDs
5. Light Sensor
6. Antenna
7. Power cord
8. Pairing LED Indicator
9. Power LED Indicator

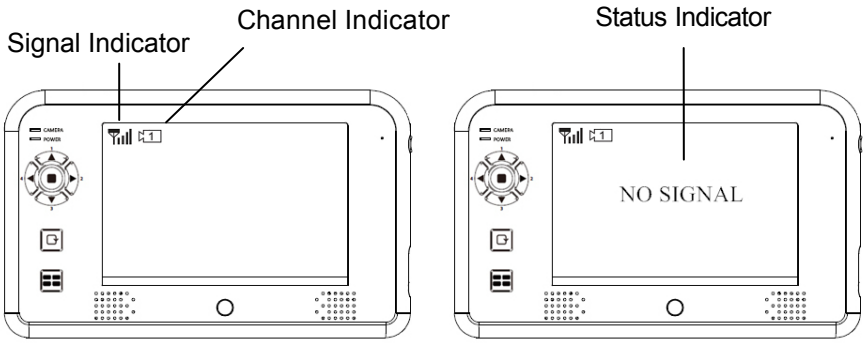
GETTING TO KNOW THE MONITOR



Monitor Function Buttons

Buttons		Function	Remote Controller
	1	(Menu Mode) [Cursor Up] / (QUAD View Mode) [Hot key CH1]	
	2	(Menu Mode) [Cursor Right] / (QUAD View Mode) [Hot key CH2]	
	3	(Menu Mode) [Cursor DOWN] / (QUAD View Mode) [Hot key CH3]	
	4	(Menu Mode) [Cursor Left] / (QUAD View Mode) [Hot key CH4]	
	5	(Menu Mode) [Menu / Enter Button]	
	6	(SCAN Mode) [SCAN Button]	
	7	(QUAD Mode) [QUAD Button]	

Monitor Display Icons

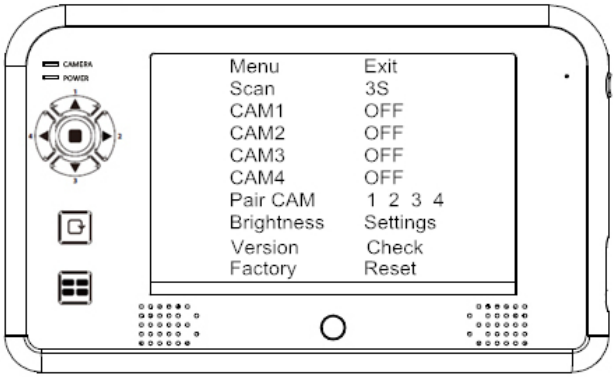


Signal Indicator shows signal strength as below:

Signal Level	Indicator	VGA Frame Rate	QVGA Frame Rate
Perfect		5~10 fps	15~30 fps
Good		3~5 fps	12~20 fps
Fair		2~4 fps	8~15 fps
Low		0~1 fps	0~4 fps
Zero		0 fps	0 fps

Channel Indicator displays the current/active camera. Status Indicator ('No Signal') appears if the monitor does not receive a signal from the camera.

CONFIGURING THE MONITOR



Press the Power button to switch the monitor ON. Press and hold to switch the monitor OFF .

Press ● (MENU button) to enter/exit the Main menu.

Use the ▲ ▼ ◀ ▶ (Left / Right / Up / Down) buttons to navigate through menu items and change the settings.

Scan frequency

Setup the time interval for the camera channels to be displayed in Scan mode (3, 8 or 12 seconds).

1. Press ● (MENU button) and ▼ to choose the SCAN function
2. Press ◀ ▶ to choose the scan frequency. You can configure the system to perform scanning every 3 seconds / 8 seconds / 15 seconds.

Camera setting (CAM 1 – 4)

Turn ON/OFF the specified camera or set to Mirror to mirror the camera image. If the camera is set OFF, the camera image won't show on the monitor even it is supplied with power.

1. Press ● (MENU button) and ▼ to choose CAM 1.
2. Press ◀ ▶ to turn ON/OFF CAMERA 1 or MIRROR the camera image.
3. Repeat step 1 to 2 for cameras 2 ~ 4.

Note: If the camera(s) is installed upside down, please configure the camera to 'MIRROR' to acquire the normal screen image.

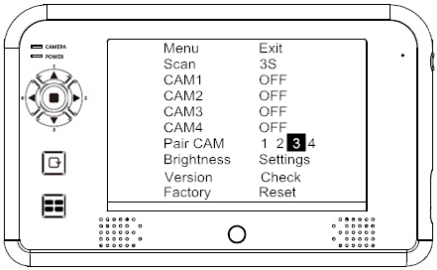
Pairing camera(s)

Complete the Pairing process if an additional/new camera is utilised, or if the monitor doesn't display a camera; use this process to pair the camera with the monitor.

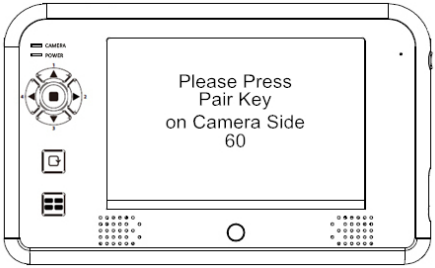
IMPORTANT:

1. To complete the Pairing process, ensure the camera is powered (reverse gear may need to be selected).
2. Complete the Pairing process ONLY when a camera cannot be displayed, or when an extra/new camera(s) is utilised.
3. Before pairing the camera, make sure that the camera power cable is connected to a power source.
4. Only assign one camera to one channel. Channel memory will be overwritten if another camera is assigned to the same channel.

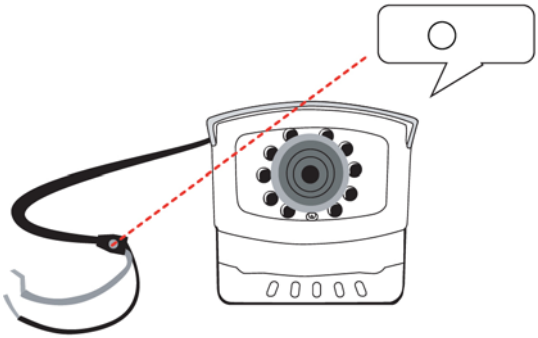
Example: To pair a new camera to channel 3, please follow the steps below:



1. Press (MENU button) to highlight channel 3 in the 'Pair CAM' function and start the pairing process.
2. System will count down within 60 seconds, system message as shown:



3. Within the 60-second count down, press the Pair Button on the camera power cable.



4. Once pairing is completed, the monitor will display the camera image.

5. Press the menu key again to save the pairing action and return to the main menu.

Brightness

Set up the brightness of the cameras for different environments (inside/ outside etc); each camera can be configured individually.

1. Press (MENU button) and to choose the Brightness function
2. Press (MENU button) to enter the sub menu
3. Use to choose the monitor or camera 1~4, and press to adjust the brightness.
4. Choose EXIT and press (MENU button) to return to the main menu.

Monitor and Camera Version

Use this feature to check the monitor and camera version number when it is necessary.

To check the monitor and camera version number, press and to display the monitor and camera version. (MENU button)

Factory Reset

Restore the monitor to the factory default settings.

1. Press (MENU button) and to choose the Factory option.

2. Press (MENU button) to restore the default settings as below.

Scan	3S	
CAM1	ON	
CAM2	ON	
CAM3	ON	
CAM4	ON	
Pair CAM	1 2 3 4	
Brightness	Monitor	08
	CAM1	08
	CAM2	08
	CAM3	08
	CAM4	08

Setting SCAN Mode

Press the SCAN button to enter the SCAN mode and display camera channels automatically.

1. Press (MENU button) and use (Left / Right) to turn all available channels ON.
2. Use (SCAN button) to enter SCAN Mode.
3. The camera images will be displayed periodly in scan mode. Unavailable channels will be displayed as a blank screen.

To exit SCAN display, please press (Left / Right / Up / Down) to go to the specified channel.

Setting QUAD Display

Press the QUAD button to enter the QUAD mode and display all the camera images on the monitor.

1. Press (MENU button) and use (Left / Right) to turn all available channels ON.
2. Use QUAD button) to enter QUAD Mode.
3. All camera images will be display on the monitor at the same time. Unavailable channels will be displayed as a blank screen.

To leave QUAD display, please press (Left / Right / Up / Down) to go to the specified channel.

IMPORTANT:

1. This function is for multi camera use/display. Before setting QUAD display, make sure that all cameras are paired to assigned channels. Please refer to the *Pair CAM* section for Pairing instructions.
   QUAD display will be restored to single camera display when a direction button (Left / Right / Up / Down) is pressed.
2. TURN ON all available channels PRIOR to entering QUAD mode.

Note: In QUAD display, the Camera Pairing function is not available.

TROUBLE SHOOTING

This section offers some helpful information to overcome most of the problems you may encounter. We hope this section can help you to enjoy a pleasant setup.

Problem	Possible Causes	Solution
System Message shows “NO Signal” on monitor screen	No power supply to corresponding camera(s)	Check lighting circuit & power is available at the camera. Check camera wiring, making sure the polarities are correctly connected.
	Channel/Monitor is not paired with camera	To complete Pairing, select reverse, hand brake ON, press the camera pairing button. See [Advanced Operation – Pairing Camera] section as a guide.
Low signal or unstable signal	Antenna directional limitation	Adjust camera antenna and monitor position.
	Strong radio signal near by away	Position WiFi router etc. from the camera and/or monitor.
Camera image is missing during manual scan	Scan channel(s) been set OFF	Press [OK] button, go to menu; enable the channel(s). See [Advance Operation – Setting Auto/ Manual Scan Sequence] for detail.
Dim / over bright image on monitor screen	Monitor brightness incorrectly adjusted.	Press [OK] button, go to menu, enter [System Setup]; adjust [Brightness]. See [Advance Operation – System Setup] for detail.
Image Frozen and receiver function buttons do not respond	System crash	Use a pin etc to press [Reset Switch] to restore the system.

For further technical support please email:
support@trailervision.co.uk

ABOUT DIGITAL WIRELESS TECHNOLOGY

This section offers some helpful information to solve most of the problems you may encounter.

About 2.4GHz Digital Wireless Signal

This innovative digital wireless solution integrates advance Frequency Hopping Spread spectrum (FHSS) technology. This technology greatly/completely reduces the interference from other devices using the same radio frequency (2.4GHz), e.g. WiFi, Bluetooth, Zigbee, cordless phone...etc. You now can enjoy high quality wireless images without flickering or 'noise'. However, weaker signal (lag or still image) can be observed from time to time, depending on the environment where the system is installed. The system is compliant with FCC part 15.247,ETSI(EN)300 328, audio / video signals transmitted 150m or further, line of sight. However, line of sight installation is not usual, or required for good system operation. Factors affecting transmission include microwave ovens, or other high frequency electromagnetic waves. Reinforced concrete walls, large scale metal products and objects should, ideally, not be located near to the camera or the monitor. Water also creates a signal obstacle, as it absorbs the signal, so should be avoided. People etc. passing through the tranmission area may also cause unstable signal quality. However, in 'normal use' as a reversing, or interior camera, the system should offer excellent performance and provide a clear and interference free image/view.

How to improve the wireless signal quality?

If possible, remove any obstacles between camera and monitor that might reflect/absorb the signal. If the wireless signal strength is low try to position the camera in a location that is above/below the vehicle chassis etc, rather than behind it. Additional 'Extension' aerials are also available.

Why Image Compression?

In order to provide a secure and interference free signal, this digital wireless system utilises a 2Mb frequency-hopping bandwidth. Different from traditional 2.4GHz analogue wireless systems, the digital wireless signal is compressed and then transmitted as Motion JPEG (MJPEG) format. By digitising and compressing the raw analogue data, the bandwidth is used more efficiently and securely.

PRODUCT SPECIFICATION

Camera		
Image Sensor	Type:	1/4” CMOS
	Resolution:	640*480
Optical	Lens Type:	Glass
	Lens Focal Length:	2.5MM
	View Angle:	Horizontal:87°±2°; Vertical:62°±2°
Night Vision	Total IR LED:	10 PCS
	LED Angle:	120°
	LED Wave Length:	850nm
	EDS Activate LUX:	1-8LUX
	Identified Range:	5-8m
Tranceiver	Frequency:	2.402-2.480GHZ
	Modulation:	GFSK
	Transmission Power:	14±2DBm
	Antenna Gain:	3dBi Ant
	Communication distance:	200M
Power Source	Power Supply:	DC 12-24V
	Current Consumption:	IR ON:220mA; IR OFF:150mA
Waterproof	IPxx	IP66
Monitor		
LCD Panel	Size：	7.0″
	Resolution：	480*234
	Luminance:	200cd/㎡
	Back Light：	LED
Transceiver	Frequency:	2.405-2.480GHZ
	Modulation :	GFSK
	Sensitivity：	-82DBm
TV Format		NTSC/PAL
Video	Compression：	MPEG-4
	Resolution：	640*480
	Video Output Level：	1Vp-p/75ohm
	Frame Rate：	12-25 FPS
LCD View Angle	Up /Down:	130°
	Left/Right:	140°
Interface	DC IN	12-24V