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1. Precautions

Storage and Keeping
1. Do not expose the System to excessive heat or cold. The storage temperature of this device is -30~+80°C, and the operating temperature is -20~+70 °C. The humidity is RH 90%.
2. Never use this device near a bathtub, wash basin, kitchen, damp basement, swimming pool or similar places.
3. Never use this device in environments with excessive moisture, dust or smoke.
4. Avoid dropping or striking this device.
5. Avoid using this device in enclosed spaces, areas with excessive vibration or subject to severe impacts.
6. Never puncture, scratch or use abrasive cleaning materials on this device.
7. Do not place cables where they may be pinched or stepped on.
8. The Control Box is not designed to be waterproof.

Operating Precautions
1. The device may be powered by a 12 or 24 volt automotive battery or vehicle electrical system.
2. Make sure all cables are connected properly. Observe polarity. Improper cable connections may damage the system. Remove the power cable connections when you do not intend to use the unit.

Warning!
1. The opening of the case should be by professionals.
2. Do not watch the video while driving unless you are monitoring the rear view camera display.
Maintenance
1. Remove all the cable connections from the control box before cleaning the device.
2. Use a mild household detergent and clean the unit with a slightly damp, soft cloth.
3. Never use strong solvents such as thinner or benzine, as they might damage the finish of the device.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This symbol is intended to alert the user not to dispose of electrical and electronic equipment.

CAUTION
You are cautioned that any changes or modifications not expressly approved in this manual could void your warranty and necessitate expensive repairs.
2. Features

2.1 Basic Features
1. 4 pcs 190° Full HD 1080P wide-angle fish-eye cameras, horizontal view angle > 170°, Maximum of 8CH inputs.
2. Techniques of dual-core ARM Cortex-A9 and SOC development of built-in high performance H.264 video encoding / decoding engineer core make it efficient to composite high accuracy seamless images.
3. Supports 4 pcs x 128G SD cards for recording storage.
4. Low-cost calibration tools, simplified calibration procedures.
5. Maximum 4CH 1080P / 30 FPS video resolution.
6. High definition 1080P HDMI video output.
7. Simplified installation steps, easy auto stitching.

2.2 Application
2.3 Features
1. Panoramic image.
2. Blending seamless stitching.
3. 360° view.
4. Auto switch to reversing image when reverse wire is triggered.
5. Auto switch to left / right image when left / right wire is triggered.
6. Installation guide with pictures.
7. Automatic plane correction.
8. Supports Recording.

3. Standard Configuration

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CONFIGURATION</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main control box</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Full HD fish-eye camera</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Remote control</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Infrared extension cable</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Main harness</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Power Cable</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Wi-Fi Antenna</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>20M extension cable for HD camera</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>HDMI extension cable</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Monitor</td>
<td>1</td>
</tr>
</tbody>
</table>
### 4. Specifications

#### 1. Main Control Box

<table>
<thead>
<tr>
<th>Panoramic video parameter</th>
<th>Input video</th>
<th>Max. $8\text{CH} \times 1080\text{P}@25 / 1080\text{P}@30$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display mode</td>
<td></td>
<td>Panoramic bird-view + single channel video</td>
</tr>
<tr>
<td>High definition HDMI output</td>
<td>Resolution</td>
<td>1080P</td>
</tr>
<tr>
<td></td>
<td>refresh rate</td>
<td>50 / 60</td>
</tr>
<tr>
<td>AV Output</td>
<td>Resolution</td>
<td>D1</td>
</tr>
<tr>
<td></td>
<td>refresh rate</td>
<td>25 / 30</td>
</tr>
<tr>
<td>Recorder parameter</td>
<td>Storage</td>
<td>Max. $4 \times 128\text{G}$ SD card</td>
</tr>
<tr>
<td></td>
<td>Compressed encoding</td>
<td>Max. $8\text{CH} \times 1080\text{P}$ H.264 encoding</td>
</tr>
<tr>
<td></td>
<td>Depression decoding</td>
<td>Max. $8\text{CH} \times 1080\text{P}$ H.264</td>
</tr>
<tr>
<td></td>
<td>Video stream</td>
<td>4M / 8M</td>
</tr>
</tbody>
</table>

- Working Voltage: 8-32V
- Working voltage range for external trigger signals: 8-32V
- working electric current: $<2\text{A} / 12\text{V}$
- Working temperature range: $-20^\circ\text{C} - 70^\circ\text{C}$
- Storage Temperature: $-40^\circ\text{C} - 85^\circ\text{C}$
- Working humidity: 10%-95%

#### 2. Camera Parameter

<table>
<thead>
<tr>
<th>Image Device</th>
<th>1/2.9&quot; SONY CMOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame Rate</td>
<td>25 / 30</td>
</tr>
<tr>
<td>Effective Pixels</td>
<td>$1920 \times 1080$</td>
</tr>
<tr>
<td>Pixel Size</td>
<td>$2.8 \mu\text{m} \times 2.8 \mu\text{m}$</td>
</tr>
<tr>
<td>Resolution</td>
<td>1080P</td>
</tr>
<tr>
<td>Video Output</td>
<td>1.0Vp-p, 75Ohm</td>
</tr>
<tr>
<td>White Balance</td>
<td>Auto</td>
</tr>
<tr>
<td>Viewing Angle</td>
<td>&gt;170(H)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>12V</td>
</tr>
<tr>
<td>Working temperature range</td>
<td>$-20^\circ\text{C} - 70^\circ\text{C}$, RH95%MAX.</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$-40^\circ\text{C} - 85^\circ\text{C}$, RH95%MAX.</td>
</tr>
<tr>
<td>Waterproof rating</td>
<td>IP69K</td>
</tr>
</tbody>
</table>
5. Wiring Diagram
6. Operation Instruction

6.1 Remote Control

- **MENU**: (ENTER / MENU)
  Enter into main menu or confirm menu selection.
- **SYS**: (ESC)
  Exit main menu interface / return to main menu interface.
- **V- / V+**: (LEFT, RIGHT)
  Left, right / Decrease, Increase button.
  Shift image channel to left / right view, or operate plus / minus in main menu interface.
- **P+ / P-**: (UP, DOWN)
  Front / back button. Shift image channel to front / back view.
- **VIEW MODE**: (SHIFT)
  Same function as Tab button to shift current channel to full screen display or exit from full screen display. It's used for switching menu selection in main menu interface.
- **ON / OFF**: (POWER)
  Turn on / off video display.
- **Number button 0-9**: (0-9)
  Input numbers.
- **- / --**: (CLEAR)
  Back space button: Delete a character.
- ****: ( )
  Press to pause recording.
- ****: ( )
  Press to start recording.
6.2 User Interface
6.2.1 User Administration

Feature Description:

1) Input password.

2) Login confirmation.

3) Change Password

4) Return to last menu

Note:
1) Initial password: 000000. Please modify password after stitching is finished.
2) If password is forgotten, input “root” to log in. Select factory default setting in Information menu and new password will be 000000.
3) The operation period lasts for 10 min after login. Password must be input again once time out or after restart device or in sleepy mode.

Password Reset
Setting Description:

1) **Current:** Current password
2) **New:** New Password
3) **Confirm:** Input new password again
4) **Save:** Save password
5) **Return to last menu:**

6.2.2 Main menu interface

![Main menu interface diagram]

Feature Description:

1) **System:** Basic function setting.
2) **Clock:** System time setting.
3) **Storage:** Storage function and system log management.
4) **DVR:** Recording function configuration.
5) **AVM:** 360 panorama calibration and related operation.
6) **Player:** Video file playback and processing.
7) **Information:** Upgrade operation and local IP setting.
8) **Radar:** Radar configuration.

Note:

1) When UART is configured as non-Radar, the Radar icon on the main interface will be hidden.
2) Recording becomes invalid when entering player menu.
3) 0-9 Numeric Keys on remote control support Quick Positioning Function: 1-9 stands for each menu in sequence, e.g., press 5 to select AVM.
6.2.3 System Setup

Feature Description:

1) Standby Delay: Time frame can be set for standby.
2) AV: PAL / NTSC. Correspondent video output format is 1080P / 50 frames or 1080P / 60 frames.
3) Full Panel AVS: Button for full screen / panoramic display. Temporarily unavailable.
4) Surround View Region: Surround view size selection.
5) Language: Language setting. Temporarily unavailable.
6) Slow Wake up: Button for wake up in slow speed. Temporarily unavailable.
7) View Ratio: Display ratio between Bird View and Single View.
8) Front Cursor: Front view cursor selection.
9) Surround View Mode: Surround view mode selection.
10) UART Function: UART function selection.
11) Exit the current interface and return to the main menu interface.

Operation description:

1) TAB key: Shift in menu.
2) Left / right or Up / Down: Change the selected function item parameters.
3) ESC key: Shortcut key for exit, return to the main menu.

Note

1) When set the radar function on, it is recommended to set the radar priority
   (For priority applications please refer to Radar Setup).
2) Set the four-channel radar priority, save and exit.
3) Menu setting change will be valid after reboot. When the UART Function is set as OFF, the radar settings icon will be hidden.
6.2.4 Clock Setup

Feature Description:

1) Set calendar time.
2) Save setup time.
3) Exit menu and return to the main menu. Menu setting change must be saved to become

6.2.5 Storage

Feature Description:

1) Format SD Card or U Disk.
2) Select all system log files
3) **None** Unselect all system log files.
4) **Clean** Clear all old system log files.
5) **Export** Export the selected system log file.
6) **Exit** Exit the Storage interface and return to the main menu.

**Note**
1) When the U Disk and SD Card work abnormally, there will be a cursor prompt on the panorama display interface and Storage menu interface. See the Storage State menu under the Storage Menu for specific error reasons.
2) Do not remove the U Disk when performing U Disk related write operations, such as U Disk formatting, exporting system logs, and exporting stitching results.
3) Do not remove the SD Card when performing an SD Card-related write operation, such as when the recording is not stopped, the SD Card is formatted, or the system log is cleared.
4) The recording supports cyclic recording.. When the free space of all SD Cards in the system is less than 512M, 20 video files which are earliest created will be deleted in order to record normally.

### 6.2.6 DVR Setup

![DVR Setup Interface](image)

**Feature Description:**

1) **Recording parameter settings.**
2) **Single video file recording time setting.**
3) **Video file resolution setting.**
4) Power on automatic video recording function setting.
5) Save setting parameters.
6) Exit the DVR interface and return to the main menu. If any parameter is modified, it must be saved before exit, otherwise the modification is invalid.

Note: When parameters are modified, saving or exit will prompt to restart.

6.2.7 AVM Calibration

Feature Description:
2) Enter chessboard setting.
3) Enter image stitching menu.
4) Enter AVM Option Setup.
5) Back to parent menu.

Note:
1) Gauge is cm by default. The stitching result will be prompted by the pop up window.
Soft Keyboard

Feature Description:
1) Exit editing.
2) Delete input.
3) Capital shift.
4) Letter lock.

Note:
1) Letter lock is locked by default. Unlock to input characters.
2) Letter can only be input via soft keyboard.

Chess Board

Feature Description:
1) Layout setting of calibration cloth.
2) Save.

Note: Layout setting should be compliant with real calibration cloth.
AVM Option Setup

Feature Description:

1) Upload calibration files of U Disk to system.

2) Output saved calibration files and 4CH single-view to U Disk.

3) Change vehicle models.

4) Exit Key: Get back to AVM Calibrate interface.

Note:
Calibration file applies XML extension.
Upload Calibration Files

Feature Description:

1) **File:** Select uploaded files with XML extension.
2) ![Gear] Confirm selected files with XML extension.

Note:
If the preference of uploaded file is empty, please select files with XML extension from the expand list. Once the change of XML files confirms, you are to be prompted to restart the system either save or exit.

Output Calibration Files and 4CH Single-view Images
Setting Description:
1) Confirm output files.

Note:
1) Before output, make sure U Disk is connected and functioning normally. U Disk shouldn't be pulled out during processing.
2) After successfully output files, name it with the time and date of the system.

Change Vehicle Models

Feature Description:
1) Select vehicle models. (Left to right: user-defined vehicle models, bus model, truck model, car model.)
2) User-defined vehicle model picture.
3) Save selected vehicle model. If changes, will be prompted to restart the system.

Note:
1) User-defined vehicle model should be in format of PNG.
6.2.8 Player Interface

Feature Description:
1) Calendar list: Green highlighted dates represent video files of current date. Press return key to get back to player interface.

2) Time list: Green represents video files of current time. Press cancel key to get back to calendar.

3) Video list and control key: All / none / delete / export / play key to operate video settings.
Note:
1) If the system is recording video, you will be prompted to close the recording before entering player. Please note the timing for player. Recording will be automatically recovered once exits the player.
2) System can only search and play videos recorded 3 months before the system's current date.

Playback Interface

Feature Description:
1) Control button and progress bar for playback.

Note:
1) Page Up / Page Down can only switch playback videos among the selected.
2) CLEAR Key support Hide/show icon of playback control button.
6.2.9 Information

1) APP Version: Current APP Flash version information / upgrade files list / upgrade confirmation key. This function is activated only when there's APP upgrade file HD360-CPU-APP-00-Vx.x.xx.tar.gz under U Disk root file.

2) Firmware Version: Current MCU Firmware version information / upgrade files list / upgrade confirmation key. This function is activated only when there's MCU upgrade file HD360-MCU-APP-00-Vx.x.xx.bin under U Disk root file.

3) IP Setup:
- Do not pull out U Disk during system upgrade. There will be a indication red dot on upgrade key if there's new APP software or MCU firmware version under U Disk root file.
6.2.10 RVS-SDS Setup (OPTIONAL ACCESSORY)

1) Channel and Sensors: Each channel uses 3 sensors. Red sign flickers when sensor detects any obstacle in the range. If combine-select currently edited locations of radar sensor, their represented red blocks will flicker.

2) Select on to enable sensor to work and off to disable. Detection range is configurable from 0.6m to 5m.

3) Save settings of selected radar sensors.

4) Restore to the initial default setting.

5) Exit to get back to main menu.

Note:

1) UART interface will display in menu when select Radar in system setup.

2) Single-view will shift according to the priority degree of radar orientation set in System Setup if the multi-sensor radar detects obstacles within dangerous range (0.6m).
Tips for Installation and Calibration of 360 System

1. The mats need to match with the vehicle size. For example, the vans or other similar-sized/smaller-sized vehicles should be calibrated with the 20CM chess-board mats. The trucks or similar-sized/larger-sized vehicles should be calibrated with the 40CM chess-board mats. If the larger 40CM mats are used for smaller-sized such as vans, please try to lift the camera installation position up to make it capture more views.

2. The rectangular zebra-tape should be laid as closely as possible to the vehicle body. Different-sized vehicles have different rectangular size.

3. The cameras should be mounted to the vehicle body as closely as possible to capture a small part of the vehicle body and the zebra-tape, trying to avoid using magnetic bases or other thick brackets. The lens of the camera can be changed accordingly.

4. Begin the calibration under uniform light, trying to avoid direct solar radiation to the mats, because the strong solar radiation will bring in light and shadow contrast, which will affect the chessboard being found.

5. Clear out the surrounding areas during calibration.
7. System Contents

- Control box
- Cameras
- Remote Control
- Power Cable
- Main Wire Bundle
- IR Extension Cable
- 1080P HD Monitor
- Camera Extension Cable
- HDMI Adapter Cable
- WEBAPP Transmitter
8. Installation

Step 1: Wiring
- Start wiring from the camera to the main unit of 360 system;
- The main unit is usually put in the central control room or behind the tool box.

Step 2: Installing cameras
- Choose proper camera position

- Drill holes that fit the size of regular assemblies.

- Fix the front housing
- Fix the back and front housing together. (Not too tight, so that you can adjust camera angle if necessary)
Step 3: Installing Cameras

• Adjust camera angle one by one. Then screw it tightly.

• Make sure the original image mark (white dot on cameras) are placed outward;

• Proper angle of cameras

Ground/other areas

Vehicle Body
Step 4: Install the main unit
• The main unit is usually put in the central control room or behind the tool box.

Step 5: Check the wiring connection before powering on
• Make sure all cables are well connected before powering on.

Step 6: Check basic function of the system
• Images from 4 cameras can be displayed on the screen
• Surround view is on the left and single view on the right
• Single view could be switched by remote if needed.

Step 7: Debug the image calibration
• For details, please refer to the Calibration Steps in next pages.

Calibration Steps
Step 1: Lay a rectangular frame around the vehicle
• Lay the lines parallel and as close as possible to the vehicle body while making sure each line could completely be shown in the according single view;
• Zebra-strip tapes (provided as standard accessory) or rectangular laser gradienter is suggested;
Step 2: Lay calibration mats

- Make sure each mat could be completely shown in the according single view.
- Mats in the front/back should be laid in the middle as the front/back cameras are mostly installed in the middle.
- While position of the mats in the right/left can be adjusted, as long as the mats are completely shown in the image, it is suggested to put middle point of the mat just below the camera.
- Measure the length (of the rectangular frame), width (of the rectangular frame) and chess position (length from middle point of the left/right mat to the back
Step 3: Enter “AVM calibrate”

- Input calibration figures of Length, width, cheese position (in cm);
- Grid size is 40 cm by default for large vehicle system, 20 cm by default for small vehicle system. You could also use other mats and set up the grid size accordingly;

- Enter chess board interface  to check whether figures are the same as the grid numbers of the mats. That is “grid (black + white) number at long side” x “number at short side”). Center means the chess board in the middle, while edge means the chess board on the left or right.

- Click  to start automatic stitching.
Step 4: Indicating information

- On the bottom of the screen, info will be shown indicating the calibration state;
- For every channel, there are 3 states:
  1) Three Chess board found, calibrate one step,
  2) One chess board found, calibrate exit only,
  3) No chess board found.
- If state 1) is indicated, the channel is successfully calibrated to the around view;
- If state 2) or 3) is indicated, you may need to check whether any mat has been shaded or whether the black and white grids have been blurred due to improper light.

Click [ ] to restart automatic stitching.

Only when State 1) is indicated for 4 channels, the calibration is completed.
## Calibration Mat Chosen and Laid

<table>
<thead>
<tr>
<th>Vehicle Size</th>
<th>Camera Height</th>
<th>Example (L=3m, W=1.5m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Width</td>
<td></td>
</tr>
</tbody>
</table>
| L<4m         | Premise is W<2m | H<1.5m is acceptable. And the higher the better. | Grid Size: 20cm  
Cheese Board Size:  
L&R: 7x5 4x5  
F&R: 7x5 4x5 |

<table>
<thead>
<tr>
<th>Vehicle Size</th>
<th>Camera Height</th>
<th>Example (L=6m, W=2.5m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Width</td>
<td></td>
</tr>
</tbody>
</table>
| 4m<L<8m      | Whatever      | H<1.5m is acceptable. And the higher the better. | Grid Size: 20cm  
Cheese Board Size:  
L&R: 7x5 4x5  
F&R: 7x5 5x5 |
Calibration Mat Chosen and Laid (Continued Table 1)

<table>
<thead>
<tr>
<th>Vehicle Size</th>
<th>Camera Height</th>
<th>Example (L=7m, W=3m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Width</td>
<td></td>
</tr>
<tr>
<td>4m&lt;L&lt;8m</td>
<td>Premise is W&lt;4m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H≥1.5m at least.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H&gt;3m is recommended.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>And the higher the better.</td>
<td></td>
</tr>
</tbody>
</table>

Grid Size: 40cm
Chess Board Size:
L&R: 7x6 4x5
F&R: 7x5 4x5

Grid Size: 40cm
Chess Board Size:
L&R: 7x5 5x5
F&R: 7x5 5x5
## Calibration Mat Chosen and Laid (Continued Table 2)

<table>
<thead>
<tr>
<th>Vehicle Size</th>
<th>Camera Height</th>
<th>Example (L=10m, W=4m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Width</td>
<td></td>
</tr>
<tr>
<td>L&gt;8m</td>
<td>Whatever</td>
<td>H&gt;1.5m; H&gt;3m recommended. And the higher the better.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grid Size: 40cm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chess Board Size:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L&amp;R: 7x5 4x5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F&amp;R: 7x5 5x5</td>
</tr>
</tbody>
</table>

Grid Size: 40cm
Chess Board Size:
L&R: 7x5 4x5
F&R: 7x5 5x5
9. WebAPP Operating instructions

9.1 Preparation
- 360 control has internal wifi, and wifi antenna is connected.
- This Web UI function does not support IOS system, please use mobile phone with android system to access.
- Access must be done using the Google browser. Because this Web UI is developed based on the rendering engine of Google browser, some built-in phone browsers or other types of browsers may not support the responsive function well.

9.2 Connection
Step 1: After the 360 system is powered on, turn on "WLAN "of the mobile phone, search for wifi signal “stonkamavs” and connect to it. Password is "12345678".
Step 2: Open browser, enter “192.168.30.1” in the address bar and access and enter the WebAPP operation interface. The upper half of the operation interface is a control keyboard, which is equal to the remote control button function. The lower half area refreshes the current display screen of the 360 system in real time, which is equal to display function. in the upper right area is the toolbar, and more settings can be adjusted here.
Note: The display screen on mobile phone has a delay for the control button response.
Please do not enter the settings quickly and repeatedly.
9.3 Features

9.3.1 Video Files Download

Feature Description:

1) Select the "+" or "-" icon at the far right of the menu bar to open or close the video download page.

2) Calendar list: Yellow highlighted dates represent video files of current date. Only dates in yellow could be selected. Also dates could be switched by clicking the ">" or "<" icon.

3) Time list: Yellow represents video files of current time.
4) Retrieve all valid video files for the selected time period.

5) Select all video files in the list.

6) Download all selected video files.

Note:
1) The download function is only available when there is video file in the 360 round view system. In other words, the SD card must be inserted and there is video file in the SD card.

9.3.2 System Setup

1) Select the corresponding configuration in the system, and click the submit button at the bottom of the page to submit the configuration.

Note:
1) After the configuration is submitted, the 360 system must be restarted to take effect.
9.3.3 AVM Calibrate

Feature Description:
1) Panorama stitching parameter settings. This function is equal to the “AVM Calibrate” interface on the system interface.
9.3.4 DVR Setup

Feature Description:
1) *DVR SETUP* Recording function related settings. The function is equal to the system’s “DVR Setup” interface.

9.3.4 Version Import And Export
FAQs
Q1: After the stitching, why don't certain area in front / back / left / right area show any image?
1. Please make sure the calibration lines and cloths are laid properly.
2. Press up / down / left / right button to shift single-view channel and make sure that all cameras are functioning normally and surrounding landscapes don't turn upside down or left / right reversion.
Q2: Part of images can't be seamlessly stitched.
It's usually caused by accumulative errors. Please measure the calibration parameter to see if it's accurate, make sure that the calibration cloths are laid smoothly enough, and check if the procedures of laying calibration cloths meet the requirements of chapter 6.1.
Q3: Some camera appears upside down or left / right reversion.
It's mainly caused by having selected wrong directions during camera installation. Please check if the camera is installed correctly and recalibrate if needed.
Q4: After stitching, edges of surrounding view image appear large scale of blank pixel area (Black area).
It appears more to vehicles with low chassis. In that situation, cameras are installed in low positions, thus the effective pixel collected by cameras is too little to compose clear images. We suggest you adjust the installation positions of cameras.
If you have any questions about this product, contact:

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