

Trailer Camera
Model: PT-230-COMN-CU
FCC ID: ACJ932A-PT230
IC:216A-PT230

PANASONIC AUTOMOTIVE



Panasonic Automotive Systems Company of America

W-LAN Camera System

User Manual

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Author

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PRIVACY WARNING

- The W-LAN receiver video camera module is built into this WCS but no video is recorded or stored in the system.

FCC/ISED Regulatory Notices

Modification Statement

Panasonic Automotive Systems of America has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Panasonic Automotive Systems of America n'approuve aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.

Interference statement

This device complies with Part 15 of the FCC Rules and ISED's licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

The antenna should be installed and operated with minimum distance of 20 cm between the radiator and your body.

Antenna installation should be performed by a licensed or qualified installer in accordance with radio frequency codes.

Le présent appareil est conforme aux CNR d'ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

L'antenne doit être installée de façon à garder une distance minimale de 20 centimètres entre la source de rayonnements et votre corps.

L'installation de l'antenne doit être effectuée par un installateur agréé ou qualifié conformément aux codes de radiofréquence.

Radiation Exposure Statement:

This device complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the ISED radio frequency (RF) Exposure rules. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with greater than 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.

FCC Class B digital device notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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 cause harmful interference to radio or television 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:

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAN ICES-3 (B) / NMB-3 (B)

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de classe B est conforme à la norme canadienne ICES-003.

When used as intended, the W-LAN Camera/Receiver complies with FCC Section 15.203 and Industry Canada RSS-Gen 6.8 requirements as follows:

- The W-LAN Receiver antennas shall be installed and handled by professionals specifically designated for this purpose.
- The W-LAN Receiver shall be used with only the approved antennas and no antenna other than that authorized by the manufacturer shall be used with the device.

The W-LAN Camera is provided with specially tuned antennas to communicate with the W-LAN Receiver. The use of an antenna other than that provided may cause the Wireless Camera system (WCS) not to function properly. The installer shall be responsible for ensuring that only the supplied antenna is employed so that the FCC/ISED radio frequency limits are not exceeded. Installation of the Camera with an improper antenna may void user's authority to operate the device.

FCC and ISED Antenna Information and Antenna Statement for Canada:

This W-LAN Camera/Receiver radio transmitter has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

This radio transmitter [IC: 216A-PT230] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Receiver Antenna Detail

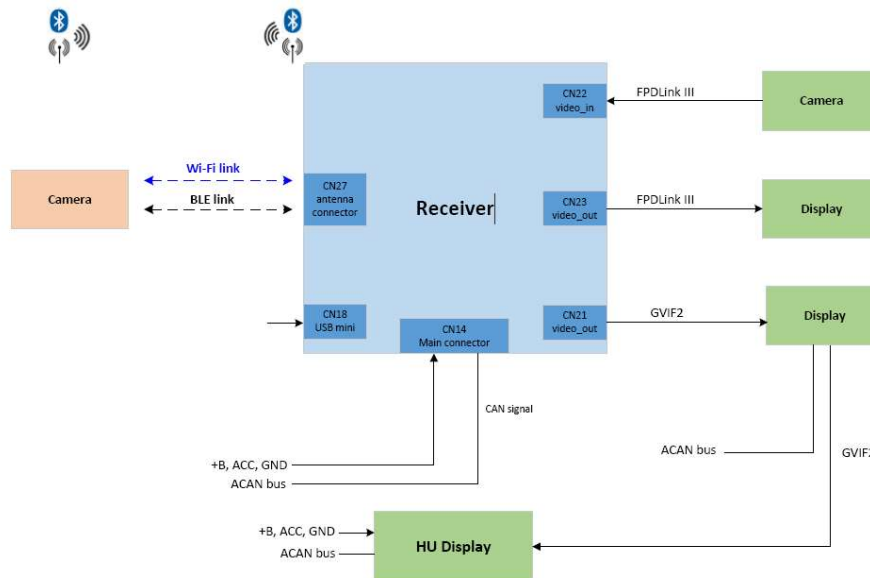
Standard	Brand	Model	Antenna Gain	Frequency Range	Antenna Type	Connector Type
RF W-LAN	Yokowo	VZ-003900	Avg.: 3.74dBi Peak: 4.61dBi	2.4 to 2.4835GHz	Sharkfin	Coaxial (50 Ohm)
RF W-LAN	Yokowo	VZ-003902	Avg.: 2.97dBi Peak: 4.20dBi	2.4 to 2.4835GHz	Sharkfin	Coaxial (50 Ohm)
BT			Avg.: 2.68dBi Peak: 3.86dBi			

Camera Antenna Detail

Antenna NO.	Brand	Model	Antenna Gain	Frequency Range	Antenna Type	Impedance (Ω)
RF WLAN #1	Air gain	ET03PCACA	Peak 5.9 dBi @ 2.44 GHz	2.4 to 2.49 GHz	Dipole	50
RF WLAN #2	Air gain	ET03PCACA	Peak 5.7 dBi @ 2.46 GHz	2.4 to 2.49 GHz	Dipole	50
BLE	Air gain	N01PCAAB-T2M59-PK1-G110U	Peak 5.8 dBi @ 2.45 GHz	2.4 to 2.49 GHz	PCB	50

Introduction

The Wireless Camera System (WCS) includes wireless camera, display and a W-LAN receiver. The camera streams video over W-LAN to the multiple display in the vehicle via the W-LAN receiver. The wireless camera will come paired with the system from the manufacturer. The user will have the ability to add remove cameras (see WCS Pairing). Video can be streamed consciously or on-demand on each display.



Wireless Camera System Diagram

W-LAN Camera System Electrical Specification:

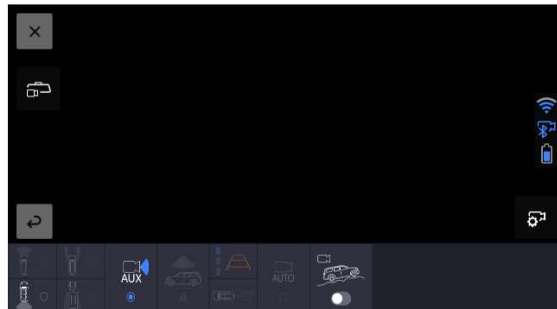
	Receiver	Camera
Operational voltage	9 V - 16 V	9 V - 16 V
Operational current	0.65 A	0.6 A
Operational frequency	2.4 GHz W-LAN and BT	2.4 GHz W-LAN and BT
Operational power consumption	9 Watt	7.2 Watt
W-Lan transmit power	29.94 dBm	28.81 dBm
BTLE transmit power	18 dBm	17.34 dBm
Storage Temperature	-40 deg C to + 85 deg C	-40 deg C to + 85 deg C
Operating temperature	-30 deg C to +70 deg C	-20 deg C to + 60 deg C
802.11g sensitivity 54Mbps	-74 dBm	-74 dBm
BT receiver sensitivity	-80 dBm	-80 dBm

Battery Electrical Specification:

Battery/Chemistry	Li-Fe-PO4
Charge temperature	0 to +45°C
Run time current draw	1.78-2.2 A
Charge/Discharge cycle	Charge at 3.6V, 2.0A max Cut-off current 140mA Discharge at up to 6.0A max Standard Charge/Discharging 1000 cycles
Battery status indicator	Tri-color LED

GETTING STARTED WITH WIRELESS CAMERA SYSTEM

1. Make sure camera battery is fully charged before using camera with W-LAN receiver
2. Wake up wireless camera by Plugging the USB-C cable to wireless camera and computer USB port
3. Power on W-LAN receiver by supplying 12V via power harness.
4. The wireless camera status indicator should come on after a few seconds.
5. Wait for the wireless camera status indicator to become solid green, indicating video is streaming.
6. Press AUX  on the display window to display wireless camera video on the main display.



7. Press  on the main display window to show the same wireless camera video on the second (display
8. Press ) to change video from wireless camera to wired video
9. Turn off 12V to turn receiver off.

WIRELESS CAMERA SYSTEM OPERATION

1. Waking up the Wireless Camera

To conserve battery the wireless camera will be in sleep state when shipped from factory.

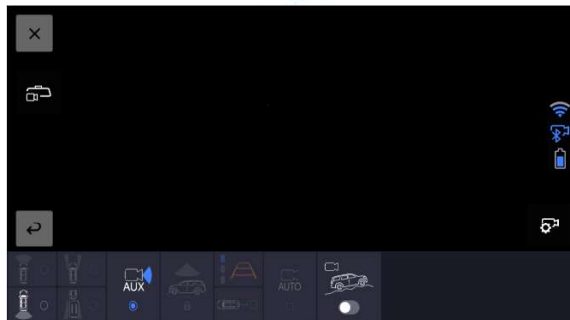
To wake the camera, you may perform one of the following actions:

- Supply 12V
- Connect a USB-C cable to a USB power

2. Main display and operation

a. Turn on receiver by applying 12V

b. Press () to access the wireless camera video.



- c. Press  to enter settings menu, select "Camera Device Management".



- d. To connect to a previously paired camera select the camera to view Connect button and press the Connect button on the screen.



- f. After the camera connected to the W-LAN receiver you will see the camera stream on the multimedia display.
3. Second display operation
- a. Wired camera view Only Mode (default)

Wired camera is always displayed on the second display in this mode.



b. AUTO Mode

In AUTO mode, if the left or right turn signals are engaged the **wireless camera** video is shown on the second display. If turn signal is off, then **wired camera** video is displayed on the second display. This feature helps in conserving the wireless camera battery when it is not connected to the 12V vehicle power supply by switching the video to cargo and turning off the video streaming in the wireless camera.



c. ON Mode

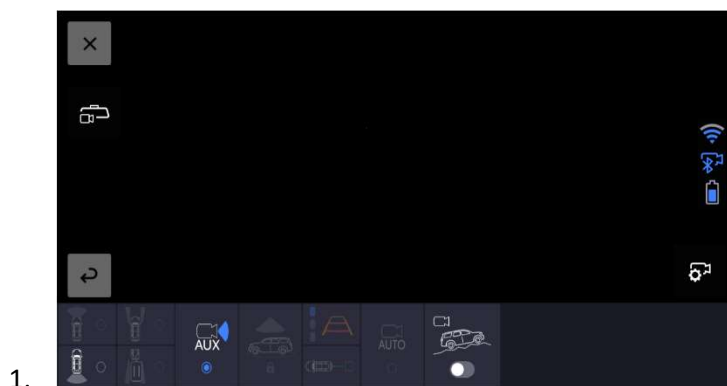
Wireless camera video is always displayed on the second display in this mode.



WIRELESS CAMERA SYSTEM SETTINGS

Wireless camera settings allow flipping an image, pairing more wireless cameras, run diagnostics, reset settings, and perform software updates.

1. Turn receiver on
2. Press the Aux () button in the screen to see wireless camera landing page.



3. Wireless camera setting menu is only accessible while vehicle is parked.  icon from the main display.



4. To exit the wireless camera settings, select  icon.

5. Wireless Camera Settings Menu

- **Camera Device Management**

Camera Device Management menu lists all currently paired wireless cameras to the system and allows you to add/delete/turn off your wireless cameras.

- **Diagnostics**

Provides you with wireless camera and W-LAN receiver (WiFi Receiver) diagnostics. Reset Settings restores the factory default settings.

- Second display will be set up (default) **ON** mode
- Second display will be set up (default) wired camera view
- Flip WiFi Camera Image option will be set to (default) **ON**

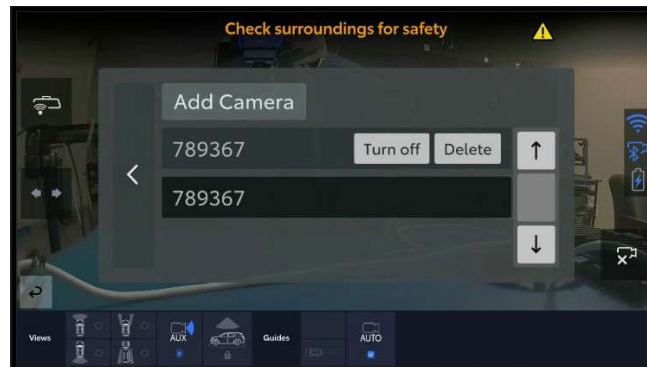
- Delete all paired wireless cameras
- **Flip Image**
This is a toggle button to flip the camera image vertically.

WIRELESS CAMERA PAIRING

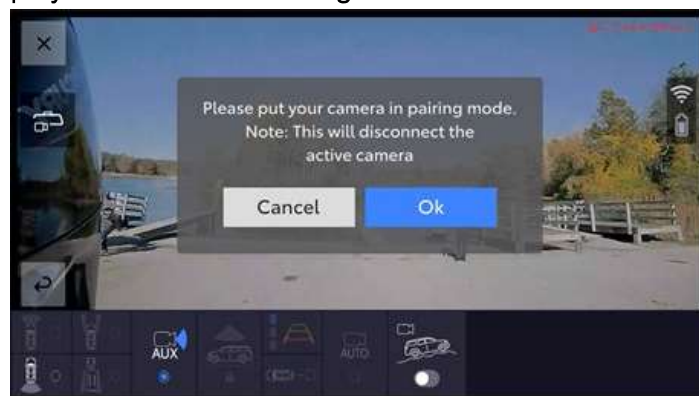
1. Enter to wireless CAM screen.



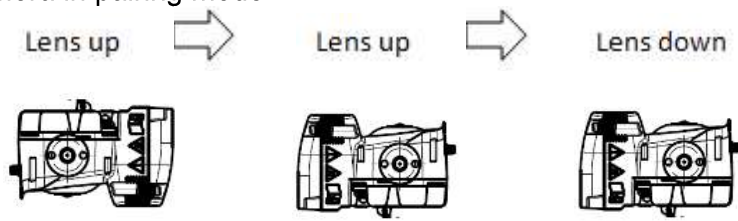
2. Press  to enter settings menu, select "Camera Device Management", and click "Add Camera".



3. The main display shows below message.



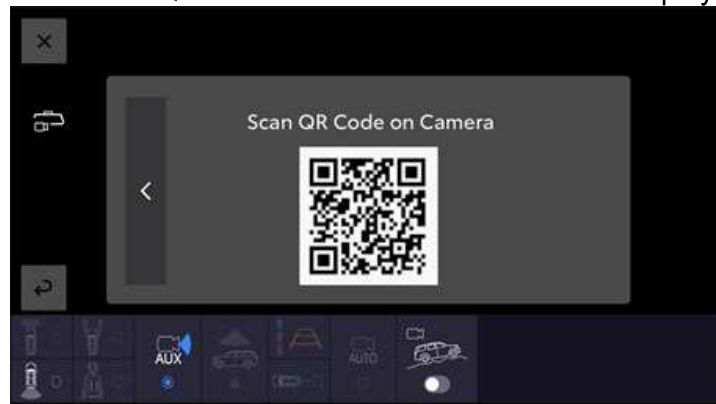
4. Move the Trailer CAM following the sequence below in order to put the camera in pairing mode.



- 1) In lens up position for 5 seconds
- 2) In lens down position for 5 seconds
- 3) In lens up position again

Once the wireless CAM enters Pairing mode, the wireless CAM LED will be blinking orange

5. Select "OK" button and QR code will be shown on the radio display.



6. Aim the wireless CAM to the radio display to scan the QR code.

7. Once QR code scan and pairing is completed, "Wireless Camera was added successfully" will be displayed.



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7. If QR scan or pairing failed, a failed message is displayed. Please try previous steps again.

