Premium Real HD Blackbox

Lukas **DUO**
Blackbox
Driving Recorder(Dashcam)
User's Manual

Premium

Real
HD

Thank you for purchasing LUKAS blackbox!

This manual was based on the LUKAS Duo blackbox model made by Qrontech.
Please note that there may be some differences if you are using a different model.
At the Lukas blackbox website **(www.lukashd.com)**, you can download a range of information and a viewer.

▌ Read Carefully Before Use ▌

- Be sure to read the manual to ensure the correct use of this product.
- Qrontech retains all rights to this manual in accordance with the copyright law.
- When necessary to improve the product,some product functions may be altered without notice .
- There may be some differences in functions depending on the product's firmware version.
- This manual has been prepared based on the Lukas Duo blackbox model, and there may be some differences if you are using a different model.
- This product is an accessory for safe driving. In the event of a car accident, all responsibility is borne by the driver. Please use the product appropriately.

▌ Scope of Guarantee and Responsibility ▌

- This product is an equipment for recording image and sound to provide visual proof of a car accident, but we do not guarantee that it will record all accident images and sounds.
- We will not be held responsible for any damages due to a malfunction of this product, damage caused by data loss or other damages related with this product.
- Generally speaking, the memory of this product has a limited life span, and there may be data loss due to static electricity or external voltage. For this reason, it is highly recommended to copy and save important data to other media (hard disk, CD, portable memory etc.).
- Even in the event of a car accident, if an impact is not big enough, the embedded sensor may not detect the impact for the auto record.
- SD card may have corrupted images (omission of image recording, cessation, frame change and omission, other defects in image recording) due to a slow-down in reading/writing and other defects. Be sure to use a genuine memory card, and format it periodically (once everytwo weeks for 16GB).
- This product is an auxiliary device to record the driving image from a car. As it may not be recorded depending on the driving condition, simply use it as a reference to check driving image.

Contents

▌ Customers Service Information ▌

- Address: A-1201 Woorim-Bluenine, 240-21 Yeomchang-dong, Gangseo-gu, Seoul, Korea
- E-mail: lukas@qrontech.com
- Website: www.lukashd.com
- Inquiry: (+82) 2-2093-1250
- Fax: (+82) 2-2093-1264

1. Attentive Items In Usage

⋮ Cautions for the Use of the Product⋮

1. Never leave the production heat or cold for a long period of time.
   Exposure to direct sunlight in the summer or cold weather in the winter for an extended period of time may cause a malfunction or disorder. When not using the product, take note of its storage temperature.
2. Do not dismantle this product or alter its structure arbitrarily.
   If the product is dismantled or modified by anyone other than an authorized technician, the warranty will be invalidated. For inspection and maintenance, please call our customers service center.
3. Do not alter or cut the cigar jack cable, as this may damage the product or the car. Any resulting damage to the product for the car shall be the responsibility of the user.
4. Do not touch the powered part of the product with wet hands, or allow water to enter the product.
   As the product is not water-proof, exposure to water may cause malfunction, fire or electric shock. When cleaning the product, use a soft dry cloth instead of water, volatile agent or detergent.
5. Never impose a heavy impact on the product, or inject an alien material into it. Excessive impact, load or injection of alien material can cause its malfunction.
6. Use only compatible power cables and accessories that have been certified by our company.
   We will not be held responsible for product damage or other losses resulting from the use of non-certified parts.
7. We do not guarantee the operation of devices and peripherals that we have not supplied. We only guarantee the compatibility of devices and peripherals that bear a certificate of compatibility with this product. Any problems with incompatibility are the responsibility of the user.
8. Do not operate the blackbox for a long period of time while the car's engine is not running. This will run down the car battery, which will make it difficult to start the motor.

9. The product may not be operated at a high temperature when 'Use of High Temperature Safety Mode' is selected. If the product is used at a high temperature, the recorded image may be changed or damaged, and the product may be abnormal. For the protection of the machine and to ensure stable recording, the product has a function to stop operation at a high temperature. At purchase, it is set to stop recording at temperatures higher than 65°. (When 'Use of High Temperature Safety Mode' is set in the PC viewer program environment.) Lukas viewer setting,
10. When the surrounding brightness changes radically, the quality of the recorded image may be degraded. Remember that the quality of the recorded image may be degraded when the car enters/exits a tunnel, the background light is too strong or there is no light around it at night.
11. When an accident occurs with an impact lower than a certain threshold, the event data may not be recorded. In addition, the image may not be recorded during some major accidents due to the cut-off of power.
12. Never pull out the power cable while using the product, as this may damage the product. Never use it at a voltage other than the rated voltage, as this may cause damage to the product or the fi re.
13. Some PC products may not support Lukas Viewer, or there may be some disconnections in voice/image.
14. In a dim environment, noise may be generated in the recorded image.
15. In the event of a sudden change of frame or Driving↔Parking modes, there may be a loss in image data.
16. When you stop or park the car, the recorded image may be shaken due to the car's vibration.
17. Motion Detector may malfunction due to changes in the surrounding light, weather and environment. In this case,an additional file may be generated due to continuous operation detection.
18. When parking at underground parking lots and in a environments, the Motion Detector may not operate normally due to noise and vehicle security LEDs.
19. The left/right side image quality of this product may differ due to the characteristics of the wide-angle lens.
20. If you notice any problem in using the product, call the customers center for consultation. If you continue to use the product, the problem may worsen and you may even invalidate your warranty.

Installation Cautions

1. Do not place other objects near the product.

   As objects near the product may produce refl ections on the window, please do not leave other objects near the product.

2. Take care to keep the camera lens from being contaminated by dust or foreign objects.

3. Do not attempt to install or operate the product while driving.

   For your safety, please do not attempt to install or operate the product while driving. Attempting to do so may cause a traffic accident.

4. Please keep the product fixed securely. An incorrectly installed product may operate abnormally, or may fall off and affect driving safety.

5. Please avoid using excessively dark window tinting, as it may make the video recorded by this product hazy or distorted.

6. Whenever possible, install this product at the point farthest from the antenna of the receiver.

   The electromagnetic waves produced by the blackbox may result in a dropin receiving sensitivity.

7. Be sure to use a genuine Lukas rear camera cable. The rear camera cable is specially designed for the Lukas blackbox.

   The use of an imitation may result in issues with poor video quality, such as stuttering, dropped frames, low frame rates, etc.

8. Video may appear dark when using the CPL filter.

   We don't recommend using the CPL filter at night, or for cars with tinted windows. (Depending on tinting conditions, a rainbow effect may appear on recorded videos)

9. When using the CPL filter, remove the UV filter first.

   Depending on the view angle, the CPL filter may cause a "vignette" effect in some images.
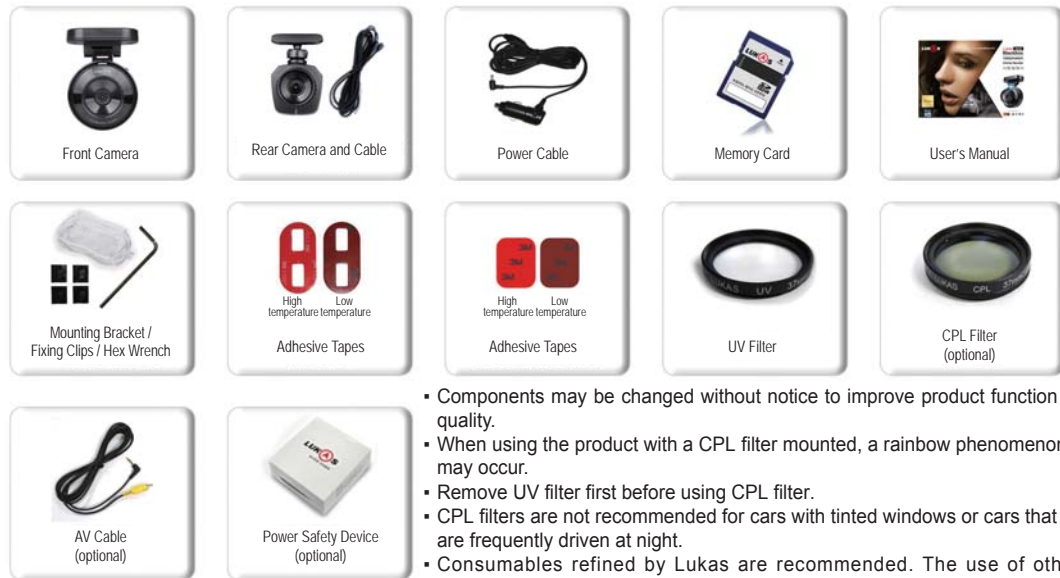
Cautions Related To Memory Cards

1. Do not forcefully remove the SD card while the product is in recording mode.

   Be sure to turn off the product before removing the SD card. Removing the SD card when the device is turned on may damage the video file or cause an operation error of the SD card.

2. Please format the SD card at least once a week (recommended for 16GB cards)

   Repeated read-write operations may damage the files contained in the SD card. For this reason, regular formatting may prevent the files contained in the SD card from being damaged. In addition, the maximum lifespan of the SD card is six months, and Qrontech shall not be liable for any recording errors incurred by the use of the SD card beyond this period.

3. Always use SD cards supplied by Qrontech.

   Qrontech shall not be responsible for any problems caused by using SD cards not provided by Qrontech.

4. Handle with care when inserting and removing the SD card to avoid burn injuries.

   The SD card operates at very high temperatures, so you must be careful when handling the card.

5. Operating temperatures may vary depending on the performance of SD cards.

6. Be sure to back up your recorded videos using an additional storage device (PC, external HDD, etc.).

   A backup of the SD card data using an external storage device may prevent the loss of important data.

7. Be sure to format the SD card when making a mode change in preferences, etc.

8. Please set your preferences again when there is a change in the storage capacity of the SD card. Failure to do so may result in a critical error. e.g.) 16GB → 32GB or 32GB → 16GB

- Check if there are all the component items as in the picture below.
- AV cable (separately purchasable) is used to connect the blackbox and the products with AV-IN terminal such as navigation and monitor.

Front Camera	Rear Camera and Cable	Power Cable	Memory Card	User's Manual
Mounting Bracket / Fixing Clips / Hex Wrench	High temperature / Low temperature Adhesive Tapes	High temperature / Low temperature Adhesive Tapes	UV Filter	CPL Filter (optional)
AV Cable (optional)	Power Safety Device (optional)			

▪ Components may be changed without notice to improve product function or quality.
▪ When using the product with a CPL filter mounted, a rainbow phenomenon may occur.
▪ Remove UV filter first before using CPL filter.
▪ CPL filters are not recommended for cars with tinted windows or cars that are frequently driven at night.
▪ Consumables refined by Lukas are recommended. The use of other consumables may restrict warranty service.

■ Even if you switch voice recording & sound effect on/off with the button, the changed function will be initialized when you reboot the blackbox.

[Additional Function Using Buttons]
• Change of use of event buzzer sound:
  While pressing 8 E button, shortly press 14 M button.

[Formatting Method of SD Card]

	Name	Function
1	Security LED	Security LED is kept on while power is on
2	Camera Lens	Image shooting, CMOS digital sensor
3	37mm UV Filter	Lens protection
4	GPS	Bult-in Sirf Star 3 GPS (GPS information receiving such as location, time, speed, etc.)
5	Power Switch	Switch for power On/Off
6	AV-IN	Connected to rear camera (micro USB)
7	AV-OUT	Output real time blackbox front/rear image with a video jack
8	Emergency Recording Button (E)	Press it longer than 2 sec: change of driving ↔ parking mode
		Press it shorter than 2 sec: Emergency recording
9	Speaker	Output various announcement voices
10	Segment LED	Display time, speed, status and others
11	Adjusting screw	Blackbox direction adjusting purpose screw
12	DC-IN	Power supply with power connector
13	SD Card Slot	For insertion/removal of SD card
14	Voice Recording Button (M)	Press it longer than 2 sec: segment LED On/Off
		Press it shorter than 2 sec: voice recording On/Off

| Type	Formatting on PC	Direct Formatting at Blackbox
Method	1. Insert SD card to PC 2. Click the right button of mouse. 3. Select 'format' and start formatting process. 4. Insert SD card into blackbox.	1. Insert SD card into blackbox and turn the power on. Wait till the booting is completed. 2. Press 8 E and 14 M buttons at the same time. 3. Segment LED 'For' is blinking (standby 15 sec) ▶ Start formatting: Press 8 E button. 'For' stops and voice guidance speaks. After formatting, it automatically reboots. (duration time: approx. 12 sec) ▶ Cancel formatting: Press 14 M button.
Features	Settings stored in Setup folder is initialized. To maintain the settings, back up the Setup folder before formatting then copy & paste it back to the SD card after formatting.	Setting is initialized to default value.

4. Installation Guide

▪ For the safety, be sure to check the following items before installation and then install it in order.
▪ Park the car on a bright and fl at ground and turn off the engine. Take off the key and then start the installation.
▪ Clean up the window glass where to attach the blackbox.
▪ Check the power terminal and the video-out terminal of blackbox in advance before installation.
▪ If the lens of blackbox is set to be upward, the product may not work properly (GPS receiving and event continuous generation)
▪ To secure the optimum image quality, keep the front window clean at all times.
▪ If the lens of blackbox is contaminated with impurities (e.g. fingerprint), the recording quality may be degraded. Therefore, keep the lens clean at all times.

Front Camera
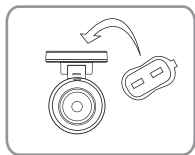
1. Apply the double-sided tape to the mounting bracket of blackbox.
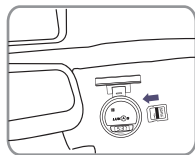
2. Select the place on the front window (in front of room mirror) not to interfere the driver's view and attach the blackbox. Insert the SD card into the product.
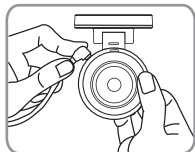
3. Connect the jack of power cable to the main body of product and squeeze the power cable along the A-pillar (pillar beside the driver's seat).
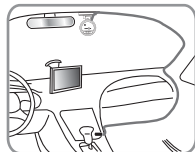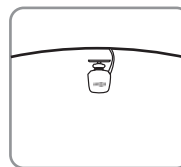
4. Insert the power cigar jack and then start the engine to check if the version is displayed on the segment window of blackbox.

▪ When adjusting the blackbox angle, it is better to connect the video-out terminal to the display of navigation and then adjust the angle while looking at the present image.
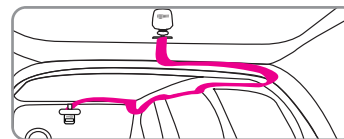
Rear Camera
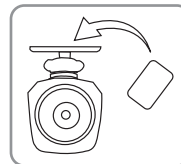
1. Attach the double-sided tape on top of the rear camera.

2. Choose an installation point on the rear window.
   (The center of the rear window is recommended as the installation point)

3. The front and rear cables of the Lukas Duo are designed to be linked together. Link the cable with the rear camera by squeezing the cable from the gap between the front window and the ceiling interior all the way up to the upper part of the rear window through pillar A, B, and C. (Using a card-like object while squeezing the cable may facilitate installation work)

▪ As the installation procedure above is based on SUVs, installation methods may vary depending on vehicle types.

5. Recommended Installation Angle of Product

Viewing angle of LUKAS blackbox can be adjusted up, down, left and right by user. As the image quality may depend on the viewing angle, it is better to adjust the angle properly according to the following explanation.

▪ Right images are ones photographed at the same time and same place by just changing the up/down angle. Viewing angles presented on the left are the examples for explanation and they can be changed according to the slope of front car window.

Fixed Image 40%
Moving Image 60%
(Impact Sensor Z=-0.22)

It is the image photographed in the recommended ratio of 4:6 at installation of product. It maintains the appropriate brightness and resolution and, as you can see, it can photograph even the signal light in front of it when the car stops exactly at the stop line.

Moving Image 60%
Fixed Image 40%

Fixed Image 50%
Moving Image 50%
(Impact Sensor Z=-0.27)

This problem occurs when it is bent excessively downward. As you see, there is no problem in brightness, but the correct information can hardly be obtained because the signal light is not seen.

Moving Image 50%
Fixed Image 50%

Viewing angle is located at the end of the hood (Impact Sensor Z=+0.15)

If viewing angle is facing too upward, the screen gets generally dark due to the sun light on the left top. As shown here, the brightness of image may depend on the angle.

Moving Image 100%

<Not Recommended>

▪ Installation by Impact Sensor: Z-axis value lies on -0.1~-0.3. In case of general sedan, -0.2 is recommended.

Wait!

Optical lenses have the characteristics that 20% of left/right ends can get unclear, distorted and varied. It generates 10% or lower deviation on left/right sides (10% or lower based on MTF).

6. Product Features

► **Two channel support function**: Front/rear recording possible through AV-IN port(mini USB) connection with a compatible rear camera.
► **Clear Image**: Front-1280×720p HD Recording Max 30 fps/16:9 wide screen/ F2.2 Bright Lens selected (when using front camera only)
Rear-1280×720p HD Recording Max 15 fps/16:9 wide screen/ F2.2 Bright Lens selected (when using both cameras)
► **View Angle minimizing distortion**: Diagonal angle (approx. 135°)/Effective angle:horizontal (approx. 107°) vertical (approx. 56°)
► **Diverse 37mm filters**: UV filter, MC UV filter, CPL filter etc.
► **Direct Formatting Function**: SD card can be formatted directly from the blackbox, without using PC .(refer to the bottom of page 7)
► **Security LED**: While on Parking Mode, it announces that the blackbox has been installed with the operation of security to prevent the accident.
► **Super Cap**: Even when the power is cut off, image data can be safely saved.
► **Support for Various Parking Recording Modes**:
  - Normal + Event: At least twice longer recording time is available than in driving mode.
  - Event + Motion Detector: Recording to be processed only in the event of impact or motion detection (30 seconds).
► **Automatic conversion of parking ↔ driving mode**: Selectable in environments setup.
► **Embedded High-performance Microphone**: Sound and image can be recorded at the same time.
► **Output of Image**: Blackbox provides real-time images.
► **Reporting Current State of Product Operation**: Reports the state of operation on the segment window of main body and the voice sounds.
► **RTC(Real Time Clock)**: Recorded files are generated in time and date units.
► **Built-in 3-Axis Impact Sensor**: Saves the file recorded by external impact.
► **Auto-Deletion of Recorded Images**: If the memory is filled, the oldest image is deleted and the newest image is saved.
► **Functions of Diverse Environments Setup**: Customized recording can be provided for each situation through the setup of the terminal environment. Weekly announcing function provided.
► **Playback of recordings with general media player or Lukas viewer:** Provides analysis program for the recorded images.
► **High Temperature Safety Mode**: Function to protect the blackbox in high temperature condition (Approx. 65 ℃)
► **Voice announcement support**: Voice announcement of blackbox status.
► **GPS Driving Information System**: Stores 32,000 files of driving information.
► **Notification of time**: Voice notification of time at fixed intervals(selectable in the Environment setup, default value is 'use')
▪ Specific features of the product may change according to software upgrade.

Segment LED Messages of Lukas Blackbox

Segment LED Message	Voice Guidance	Description
Po 13	This is Lukas blackbox. Drive safely.	Screen that appears at the initial boot of blackbox to show the firmware version. (It may differ according to the product model and firmware version.)
5:09	-	After boot is complete, parked/stopped time is displayed. (This may differ according to the setting)
6.09	-	After boot is complete, parking/stopping time is displayed. (This may differ according to the environment setup)
'	Voice recording stopped, Voice recording started	When the voice recording function is activated, dot on the upper right side blinks. (3-second interval)
.	-	Dot blinks when both front and rear cameras are in use (50-second interval). No dot will blink when only front camera is used.
.	-	It indicates that the event buzzer is disabled.
UPdA	Firmware update started. Do not turn off the power.	When starting the firmware update, 'UPdA' appears.
PAr	Parking mode recording started. (or) Parking motion detection mode started.	When operated in parking mode, it displays 'Par'.

| Segment LED Message	Voice Guidance	Description
dru	Driving mode recording started.	When switched to driving mode, it displays 'drv'.
For	Format SD card.	It displays 'For' during the manual formatting process.
Sd_FAIL	No SD card detected.	When SD card is not inserted or removed forcibly, 'Sd_FAIL' is displayed.
Sd_Loct	SD card cannot be read.	When SD card is locked, 'Sd_Lock' is displayed. (Separate the SD card and open the lock switch on its left top.)
SAFE	High temperature safety mode started. High temperature safety mode stopped.	If the blackbox is exposed to a hot environment while high temperature safe mode is activated, 'SAFE' is displayed and safe mode is executed.
SEEYou	Terminating the system	When the power goes off and stops operation, 'SEE You' is displayed.
53	-	Current speed is displayed while driving.
dAY	Weekly carfree alarm function is activated.	It may differ according to the settings.

8. How To Use

▤ Power Connection ▤

First, check if SD memory card is inserted into the main body. Then, start the engine while the power of product is connected. (Keep the power On.)

- During booting: After the power supply the version is displayed on the segment window. The version is displayed for about 5 seconds after booting, and then changed to the time display)
- Completion of booting: After the voice announcement "Welcome, this is Lukas blackbox. Drive safely", recording starts.

▤ Recording While Driving ▤

- Driving Recording: During booting, voice announcement is made. And recording starts and the image is saved in AlwaysMovie folder.
- Event Recording: When it detects an impact greater than the one set up by the user(crashing, quick braking, speed bump etc.), it starts the event recording and issues the sound effect once, blinking the segment window. The image is saved in the EventMovie folder and the total recording time is 30 sec.
  - ▪ The detective level of acceleration sensor can be set up in the environment setup on Lukas viewer.
  - ▪ If another impact is generated during the event recording, it does not work until the event recording is finished.
  - ▪ If the power is turned off during the event recording, the power goes out after the completion of event recording.
- Emergency Recording(Manual Recording):: Even without any impact, if the emergency recording button is pressed, the image is saved in the Event Movie folder. The total recording time is 30 sec (10 sec and 20 sec before and after the event).
  - ▪ The emergency recording cannot be operated during an event recording.
  - ▪ During the emergency recording, no event recording is operated even with an impact.
- If SD card is removed while recording
(1) If SD card is arbitrarily removed from the product during the driving recording, the presently recording file cannot be terminated normally and becomes an unreproductive file.
(2) It can have a severe damage on SD card and the product.
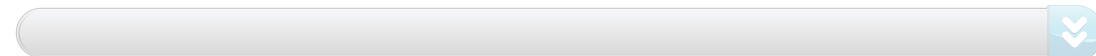
▤ Termination of Recording ▤

◙ When the engine is turned off, the power of the product also goes off and the recording is finished (when the cigar power is being used). Before then, if the working blackbox is stopped in the following order, it is helpful in maintaining the life span of the product and preserving the data.
1. In case of manual recording, it is better to wait for about 20 sec before removing the power.
2. When the product is turned off, there comes 'See you' on the segment window with the voice announcement "Terminating the system". Then, the power goes off.
  - ▪ Notice: If SD card is removed before the power off, an error may occur in the recorded image. Be sure to remove SD memory card only after turning off the product completely.
3. If the power cable is pulled off from the cigar jack, it can prevent the discharge of car battery. (This is applied to only the cars where the battery power is supplied to the cigar jack port even if even when car ignition's off.)

▤ Recording While Parked ▤

1. The change to parking mode can be made in two ways: manual and automatic.
  Manual: Press emergency recording button for longer than 2 sec. Then, the buzzer sounds twice and 'PAr' sign blinks on the segment to show the change to the parking mode.
  Automatic: If 'Auto-switch to parking mode' is checked in the user's environment setup, the sign 'Par' blinks automatically about 10 min after the car stop and it is switched to the parking mode. After completion of change to parking mode, the sign 'Par' does not blink and the voice announcement is made according to the setup of recording on parking mode.
  - ▪ When switched to the parking or driving mode, it stops the recording and therefore the image data may be lost.
2. Recording while parked is indicated as the symbol "Parking" at the bottom when playing the saved image.
  - ▪ If it is switched to parking mode in always recording, event recording and manual recording state, each file in record is stopped to be switched to parking mode. Therefore, it can cause the time delay.

3. When selecting Event + Motion Detector, the image is saved in the MotionMovie or EventMovie folder for 10 sec before event and 20 sec after the event (total recording time is 30 sec) only in the event of motion detection or impact.
   ▪ When there is no motion detector, recording is not carried out. And in the event of motion detection, the security LED blinks fast.
   ▪ In the area of no light, any movement may not be operation detected.
   ▪ Parking mode can be supported only when power safety device is installed, the operation time of recording in parking mode may differ depending on the battery condition.

▤ Check of Current Image ▤

1. In the model with video-out terminal, it can be connected to the external input (AV in) of navigation or monitor to view the present image. It can be used for adjusting the blackbox angle.
   ▪ Once adjusting the angle, remove the video-out cable while driving. Due to connected external devices, it may not work properly, which may cause a problem in recording image.

▤ Replay of Recorded Image ▤

1. In case that the image is to be checked urgently, turn off the power of main body and, after checking the voice announcement "Terminating the system" and the sign 'See you' on the segment window, separate the memory card.
2. Insert the memory card into the PC or laptop, and play it with Lukas viewer or a general media player.
   ▪ Some general media players do not support the simultaneous play of front and rear images.

[When playing with general media players]
Get into My Computer/Portable Disk/Recorded Image Folder, and double-click the wanted image or drag it into the Media Player screen.

[When playing with Lukas viewer]
Start Lukas viewer. Click the Open icon on top of the viewer.
Select My Computer/Portable Disk/Recorded Image Folder, and press ENTER.
Double-click the file to open in the list of files that appears on the right of play screen. Then the image is played.

▤ Parking Mode Setup ▤

1. **Always + Event**: Two image saving folders AlwaysMovie and EventMovie are generated. During parking mode, motion detector is deactivated and image quality is changed to parking mode recording image quality to enable longer recording time than in driving mode recording.
2. **Event + Motion Detector**: Three image saving folders AlwaysMovie, EventMovie and MotionMovie are generated. During driving mode recordings are saved in AlwaysMovie & EventMovie folders and in parking mode, only EventMovie and MotionMovie are used. Continuous recording is not carried out, and only in the event of impact and motion detection, the image for 30 seconds (10 sec and 20 sec before and after it, respectively) is saved.
   ▪ Because motion recording may have a problem of image recording omission, and continuous recording may occur depending on the change in the environment, setup the sensitivity according to parking environment. When parking in an alley, motion detection recording may be obstructed due to frequent movement.

▓ Setup of SD Card Memory Capacity ▓

Memory capacity setup can be made by splitting the storage space of each image saving folder.

1. **Always : Event**
- 75:25 (default): 75% of SD card's total capacity is setup as AlwaysMovie and remaining 25% is setup as EventMovie.
- 80:20: 80% of SD card's total capacity is setup as AlwaysMovie and remaining 20% is setup as EventMovie.
- 90:10 (Focusing on always recording): 90% of SD card's total capacity is setup as AlwaysMovie and remaining 10% is setup as EventMovie.

2. **Always : Event : Motion**
- 70:10:20 (default): 70% of SD card's total capacity is setup as AlwaysMovie, 10% is setup as EventMovie, and remaining 20% is setup as MotionMovie.
- 80:10:10: 80% of SD card's total capacity is setup as AlwaysMovie, 10% is setup as EventMovie, and remaining 10% is setup as MotionMovie.
- 50:20:30 (Focusing on motion detection and event recording)
  50% of SD card's total capacity is setup as AlwaysMovie, 20% is setup as EventMovie, and remaining 30% is setup as MotionMovie.
  ▪ For recording time and number of files according to setup above, refer to "Lukas LK-5900Duo Viewer Installation and Environment Setup Guide" stored on the Lukas SD card.
  ▪ The higher image quality set, the shorter recording time & less number of recordings are generated.
  ▪ In order to change the parking mode and SD card capacity setup, always do format SD card first and then save the settings for use.

▓ Driving Information Check ▓

This function is only available for models with GPS. Lukas blackbox is able to store approx 32,000 files of driving information.
Setting up intervals for saving driving information in the previous preference settings allow the blackbox to save the driving information of your car at defined intervals.

[How to check driving information]
1) Insert the SD card storing the driving information into your SD card reader connected to your computer and run Lukas viewer. Then, click [Information] tab on the Setting menu.
2) You can view each file of driving information at the user-defined saving intervals.
3) Clicking on selected driving data will display a corresponding map on the right.

▓ Cautions on GPS ▓

1. In general, commercial-purpose GSP devices operate within an error range of over 15m. The deviation may increase when affected by buildings or street trees or in tunnels or underground structures, sometimes resulting in cases in which receiving GPS signals is no longer possible.
2. It may take longer to receive the initial GPS signal from the point of turning on the device depending on weather conditions or the like.
3. Receiving GPS signals may be affected by tinted window or an external device installed in the car (toll-payment devices etc.).
4. The driving speed displayed on the GPS device may vary within a range of 1 ~ 30 km depending on the signal sensitivity of each area.
5. GPS information may be omitted when turning off the blackbox.

▤ Video Screen Details ▤

❶ `2013/10/11 [FRI]` Driving date YY/MM/DD Day

❷ `75Km/h` Current driving speed

❸ `110.90Km` Mileage

❹ `A` GPS reception A: GPS reception
V: No GPS reception

❺ `Always` Recording mode Always
Parking

❻ `18 : 00 : 04` Time HH:MM:SS

※ OSD display can be changed after firmware upgrades.

▤ How to Save Lukas Viewer Settings ▤

1. Run "setup.exe" to install the Lukas viewer.
   (Detailed installation information can be found on the SD card or at Lukas website)

2. Open the window by clicking on the "Settings" icon located on upper right side of the viewer.

3. Set up your preferences and click on the Save button. Then, you will see the "Setup" folder has been created on the SD card.
   (Please make sure the SD card is connected to the PC)

※ If the [Save As …] window pops up when pressing the Save button, check the SD card connection. If the connection is okay, then close the window and set up your preferences and try again to see whether your preferences are automatically saved in the removable disk.

9. Product Specification

Item	Specifications	
	1 CH (When use front camera only)	2 CH
Camera	CMOS digital sensor(sensor for HD), Lens-1/2.9(inch)	Front- CMOS digital sensor(sensor for HD), Lens-1/2.9(inch) Rear- CMOS digital sensor(sensor for HD), Lens-1/2.9(inch)
Viewing Angle	Lens: diagonal angle(approx. 135°) / Effective angle: horizontal (approx. 107°), vertical (approx. 56°)	Front - Lens: diagonal angle(approx. 135°) / Effective angle: horizontal (approx. 107°), vertical (approx. 56°) Rear - Lens: diagonal angle(approx. 135°) / Effective angle: horizontal (approx. 107°), vertical (approx. 56°)
Resolution	Front - 1280 x 720p(HD)	Front - 1280 x 720p(HD) / Rear - 1280 x 720p(HD)
Recording Speed(Max.)	30fps	Front - 20fps, Rear - 10fps Front - 15fps, Rear - 15fps * option selectable
Sensitivity	Approx. 1 Lux / F 2.2	
Video Compression	H.264 (AVI Format)	
G-Sensor	Built-in gravity sensor (impact, sudden brake, sudden start)	
GPS	Built-in Sirf Star III	
Storage Medium	SD/SDHC memory card (Min. 16GB, Max. 64GB)	
Viewer Program	General media players or Lukas viewer	
Audio	Built-in speaker and microphone	
Power	DC 8V~24V	
Video Output Mode	NTSC/PAL	
Operating Temperature	-20℃ ~ 70℃	
Storage Temperature	-30℃ ~ 80℃	
Size	Front – 107x59x36(mm) / Rear – 77x46x38(mm)	
Weight	Front – 128g / Rear – 42g	

► The operating temperature may change according to the performance of SD card.
► Please use the SD card supplied by our company. We have no responsibilities on the problems caused by the use of other SD cards.
► As the SD card works at a high temperature, be careful not to be burnt by it when taking it out.
► If it is used at a temperature higher than 65℃, its image may be changed or damaged.
► In the characteristics of optical lens, the images of left and right side may have different quality.
► When separating/inserting the SD card, be sure to check if the power and the segment display are turned off. If the card is separated/inserted while the power is on, the data in the card may be lost or the blackbox may work improperly.
► The use of CPL filter is not recommended for those who frequently drive cars or monitor cars at night.
► The product specification may change for the improvement of performance.
► Motion detection recording may not be carried out depending on surrounding environmental change.
► When parking at underground parking lots and in a environments, motion detector may not operate normally due to noise and vehicle security LEDs.

10. Quality Assurance

Model Name		Product S/N	
Customer's Name		Purchase Date	
Customer's Phone Number		Purchased Place	

1. A standard 1-year warranty is provided from the date of purchase. However, a 6-month warranty is provided for accessories, including memory card.
2. This product is manufactured under thorough quality control and inspection systems.
3. This user's instruction serves as a warranty and not replaceable. You therefore must keep it and present this warranty to have the product repaired.
4. We are not responsible for any costs incurred to install or uninstall the product, regardless of warranty status.
5. For more information, please contact seller or manufacturer.

▤ Certification Information ▤

1. Certified Company.:Qrontech Co., Ltd.
2. Equipment(Model) Name: Lukas Blackbox (LK-5900Pro+)
3. Certification Number:KCC-REM-QRN-PROPLUS
4. Manufactured Date:
5. Manufacturer/Country: Qrontech / Republic of Korea

This machine is an electromagnetic equipment for business purpose(Level A). Dealers and users shall pay attention to use it for the right purpose rather than for the house.

Conformité Européenne
(European Communities; EC)
EU Joint Standard Certification

Federal Communications Commission
Electromagnetic Wave Suitability
Certification

MEMO

www.lukashd.com

Ver.02