

# Canon

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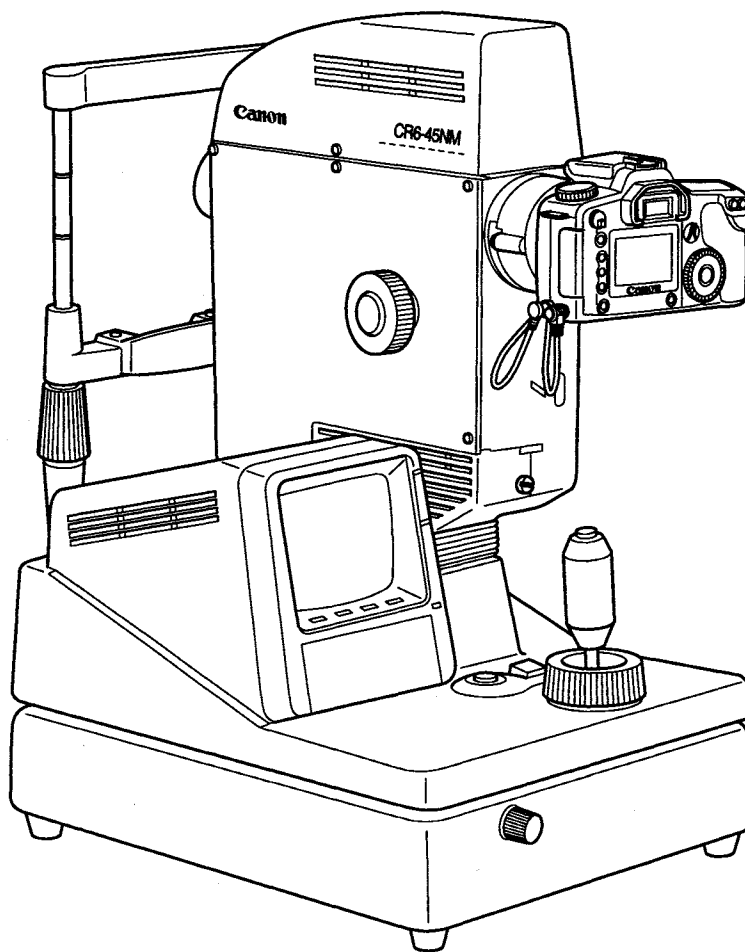
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DCS Adapter

# *CR-DA1*

## Operation Manual



Before using the instrument, be sure to read this manual thoroughly.  
Also, read the Non-Mydriatic Retinal Camera's Operation Manual.  
Keep the manual where it is easily accessible.

## PLEASE NOTE

1. In no event will Canon be liable for direct or indirect consequential damage arising out of the use of this product.
2. The CR-DA1 system has been approved by UL and GM with the EOS D30 digital camera powered by a battery. If you wish to instead use AC power to operate the digital camera, please consult Canon representative or distributor.
3. Do not use the built-in strobe tube flashing function of the digital camera when using the digital camera with the retinal camera.
4. Canon reserves the right to change the specifications, configuration and appearance of the product without prior notice.



**Follow all warnings and cautions in the CR6-45NM/CR6-45NMf operation manual for safety.**

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# 1. Outline

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The Canon DCS (Digital Camera System) Adapter CR-DA1 is for converting the size of the image taken with our Non-Mydriatic Retinal Camera CR6-45NM/CR6-45NMf into a size to allow the image to be taken with a Canon's EOS digital camera.

Please contact Canon representative or distributor for installation, preparation and adjustment of the system using the CR-DA1.

## 2. Notes for Using the Instrument

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### (1) Before Photography

- 1) Sudden heating of the room in cold areas will cause condensation to form on the objective lens or optical parts inside the instrument. In this case, wait until condensation disappears before performing measurement.

### (2) During Photography

- 1) Quality of image obtained with this system varies according to the general performance of the instruments that are used.  
Please consult Canon representative or distributor regarding the instrument to be used.  
Also, please refer to the manuals of respective instruments for the procedure for operating them.

### (3) After Photography

- 1) Turn OFF the power of the retinal camera and digital camera, and disconnect the cables prior to removing the adapter from the retinal camera.
- 2) Dust will enter the adapter and the retinal camera when the adapter is left detached.  
Also, dust on contact may cause contact failure.  
Be sure to put the dust caps on both mounts and put the adapter in a vinyl bag or the like when it is not going to be used for a long time.

### (4) During Cleaning

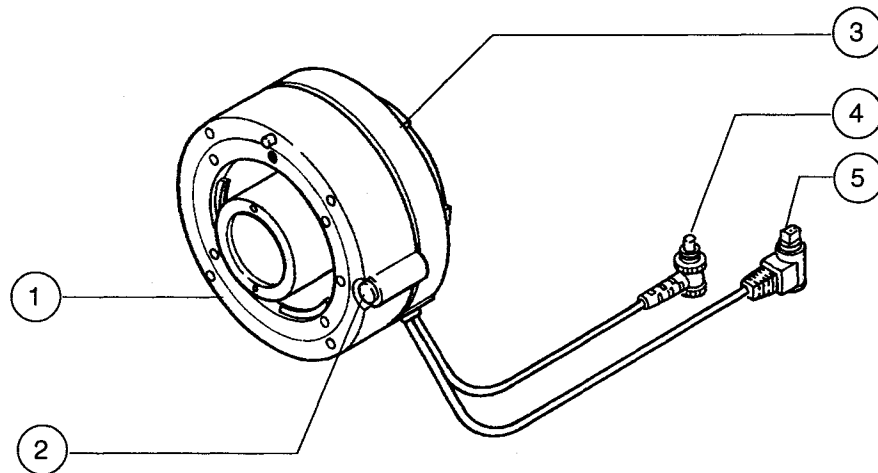
- 1) Use a neutral detergent when you clean the cover of the adapter.  
Never use a solvent such as alcohol, thinner or benzene. Otherwise, the cover may be corroded.

### (5) During Installation

- 1) Handle the adapter carefully, as preadjustment may be altered if the instrument receives a strong jolt.

### 3. Description

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**① Retinal camera mount**

This mount is for attaching the adapter to the retinal camera.

**② Lock release button**

This button releases the adapter from the retinal camera.

**③ Digital camera mount**

This mount is for attaching the digital camera to the adapter.

**④ Strobe timing signal cable**

Connected to the digital camera, the adapter receives the strobe timing signal from the digital camera.

**⑤ Release signal cable**

Connected to the digital camera, the adapter sends release signal to the digital camera.

## 4. Photography

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Operation of the retinal camera in the system using this adapter is basically the same as in the general retinal photography.

Please also refer to the manuals of the CR6-45NM/CR6-45NMf and the digital camera.

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*NOTE: FCD (Flash Compensation by Diopter) does not operate in the photography using this adapter. Also, fluorescent photography cannot be performed with the CR6-45NMf.*

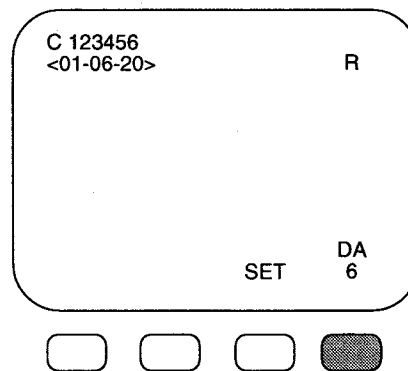
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### Step 1 Turn ON the power

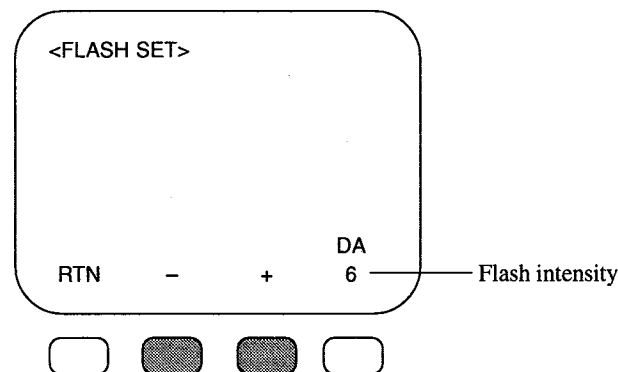
- (1) Be sure to turn ON the power in the order of digital camera and then the retinal camera.

### Step 2 Adjust the flash intensity of retinal camera.

- (1) When the adapter is attached, "DA" is displayed on the lower right side of the retinal camera monitor. Press the switch under it.



- (2) The display changes as shown below.  
Adjust the flash intensity as required using the switches under “-” and “+” signs.



Flash intensity can be changed in 11 steps (increments: 1/3 steps).

DA 1	DA 2	DA 3	DA 4	DA 5	DA 6	DA 7	DA 8	DA 9	DA 10	DA 11
Dark					Equivalent to EOS D30 ISO400					Bright

- (3) After changing the setting, press the switch under “RTN”.  
Now the changed flash intensity is valid.

### Step 3 Setting the digital camera

By referring to the manual of the digital camera, set it as indicated below.

- (1) With the retinal camera in eye front observation mode, set the digital camera as indicated below.  
Digital camera cannot be set when the retinal camera is in retinal image observation mode.

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*NOTES: 1. The settings below are for Canon EOS D30. Display may differ according to the model of the digital camera.  
2. Picture cannot be taken unless the digital camera is set properly.*

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- Shooting mode: M (manual)
- Focus mode: MF (Manual Focus) or M
- Shooting mode: Single exposure
- Auto power off: OFF
- White balance: Daylight
- ISO speed: ISO 400
- Shutter speed: 1/60

- (2) Insert the CF (compact flash) card.

### Step 4 Positioning and Focusing on the retina

- (1) Position the examinee’s eye and focus onto the retina by referring to the operation manual of the retinal camera.  
Digital camera will not be able to be operated as all the displays on the LDC panels will disappear in retinal image observation mode.

### Step 5 Photography

- (1) Press the shutter release button.

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*NOTE: It may take 1 to 2 seconds for the strobe tube to flash after pressing the shutter release button when photography is performed continuously.*

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## 5. Installation

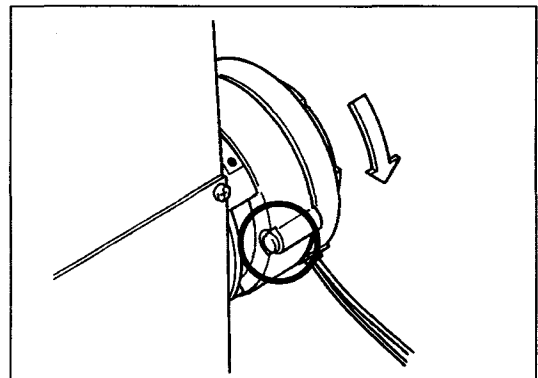
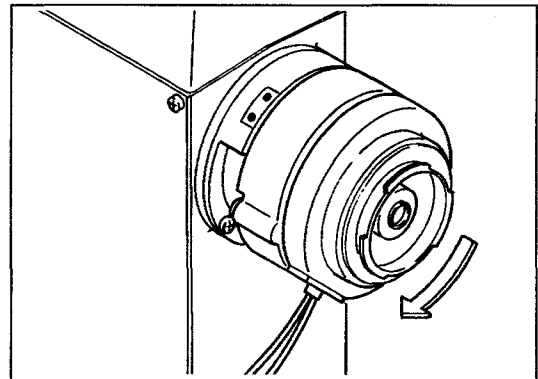
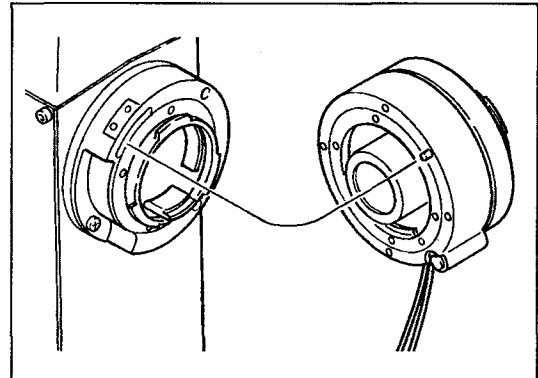


### WARNING

Be sure to turn OFF the power of respective equipments before connecting or disconnecting the cables. Also, do not handle them with wet hands.

### Step 1 Attaching the adapter to the retinal camera

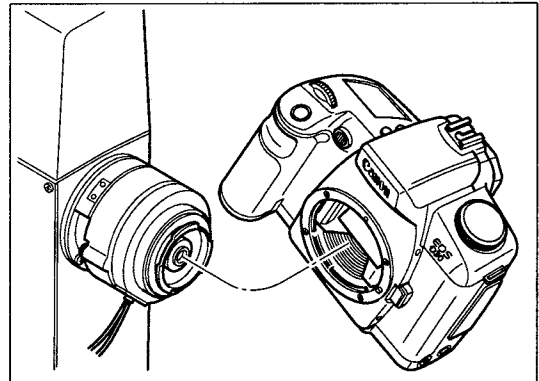
- (1) Remove the cap from the retinal camera mount on the adapter.
- (2) Remove the brush from the accessory blow brush of the retinal camera, and blow off the dust on the adapter lens with the blower in order to obtain a clear image.
- (3) Align the guide mark on the retinal camera and the guide pin of the adapter.
- (4) Rotate the adapter in clockwise direction until a click is heard.
- (5) Press the lock release button on the adapter and rotate the adapter in counterclockwise direction when removing the adapter from the retinal camera.



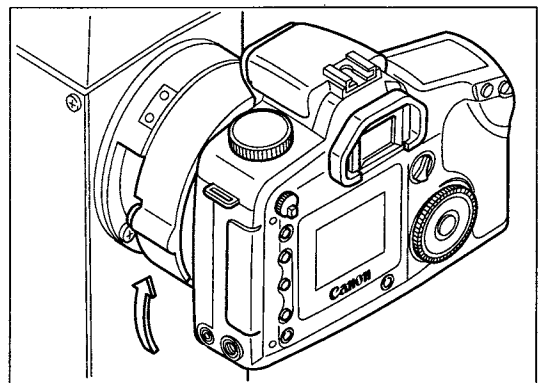


## Step 2 Attaching the digital camera to the adapter

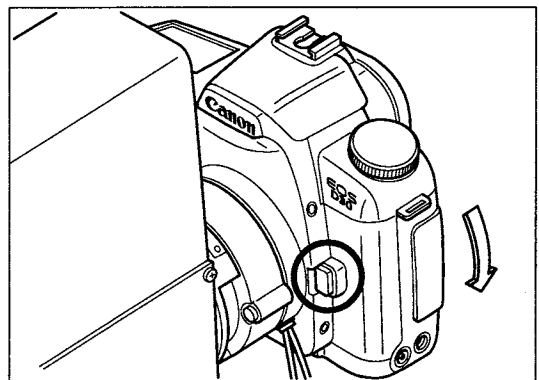
- (1) Remove the caps from the lens mount on the digital camera and from the digital camera mount on the adapter.
- (2) Align the guide mark on the adapter and the lens attachment mark on the digital camera.



- (3) Rotate the digital camera in clockwise direction until a click is heard.



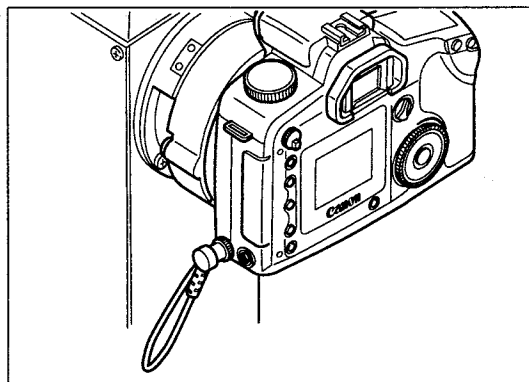
- (4) When removing the digital camera from the adapter, press the lens release button of the digital camera, and rotate the digital camera in counterclockwise direction.



### Step 3 Connecting the signal cables

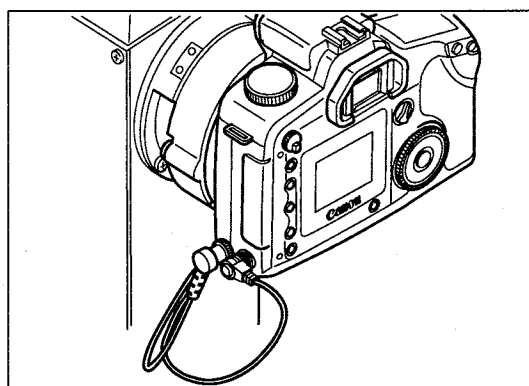
- (1) Connect the strobe timing signal cable to the PC terminal for flash synchronization on the side of the digital camera.  
Rotate the screw on the connector of the cable in clockwise direction to lock the cable.

Rotate the screw in counterclockwise direction when disconnecting the cable.



- (2) Connect the release signal cable to the remote port on side of the digital camera.

Pull the metal part of the connector to unlock the connector when disconnecting the cable.



## 6. Before Calling a Service Person

Whenever a problem occurs in the system using this adapter or when there is a mistake in operation, error will be indicated by message on the retinal camera.

In this case, take the countermeasures indicated below according to the cause.

For details and other errors, please also refer to the operation manuals of the respective instruments.

**NOTE:** If function is still not restored or when error display does not disappear, contact Canon representative or distributor.

Message on Retinal Camera	Cause	Remedy
<b>FILM UNIT ERROR</b>	Digital camera is not ON.	Turn it ON.
	CF card has ran out of free space.	Replace with a CF card which has enough space.
	Signal cables between the adapter and digital camera are not connected properly.	Disconnect the cables and re-connect them properly.

## 7. Specifications

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Attachable digital cameras:	Canon digital camera (such as EOS D30)
Mounts:	Retinal camera side: Canon EF mount Digital camera side: Canon EF mount
Magnification:	22 (on 35mm film surface) :17 (on imaging element)
Dimensions:	ø 85 × 70 mm
Mass:	Approx. 0.5 kg

## 8. Components

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Adapter ..... 1

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