



The color of the light reflected from an object varies with the color of the light source. The human brain is able to adapt to changes in the color of the light source, with the result that white objects appear white whether seen in the shade, direct sunlight, or under incandescent lighting. Unlike the film used in film cameras, digital cameras can mimic this adjustment by processing images according to the color of the light source. This is known as “white balance.” For natural coloration, choose a white balance setting that matches the light source before shooting. When the mode dial is set to **P**, **S**, **A**, or **M**, white balance can be selected from the following options:

	Option	Approximate color temperature*	Description
<b>A</b>	<b>Auto</b>	3,500–8,000 K	White balance adjusted automatically based on color temperature from 1,005-pixel RGB sensor and CCD image sensor. For best results, use type G or D lens. With built-in Speedlight and optional SB-800 and 600 Speedlights, white balance reflects conditions in effect when Speedlight fires.
	<b>Incandescent</b>	3,000 K	Use under incandescent lighting.
	<b>Fluorescent</b>	4,200 K	Use under fluorescent lighting.
	<b>Dir. sunlight</b>	5,200 K	Use with subjects lit by direct sunlight.
	<b>Flash</b>	5,400 K	Use with Nikon Speedlights, including built-in Speedlight.
	<b>Cloudy</b>	6,000 K	Use in daylight under overcast skies.
	<b>Shade</b>	8,000 K	Use in daylight with subjects in the shade.
<b>PRE</b>	<b>Preset</b>	—	Use gray or white object or existing photograph as reference for white balance (  52).

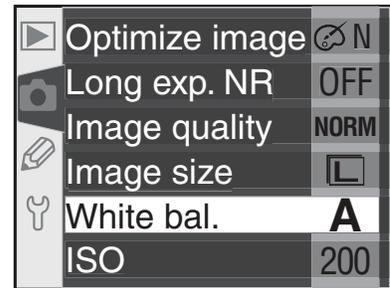
\* Fine-tuning set to 0.

Auto white balance is recommended with most light sources. If the desired results can not be achieved with auto white balance, choose an option from the list above or use preset white balance.

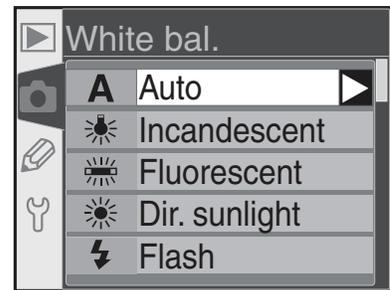
White balance can be set using the **White bal.** option in the shooting menu or by pressing the **WB** button and rotating the main command dial.

### The White Balance Menu

**1** Highlight **White bal.** in the shooting menu (👁️ 132) and press the multi selector to the right.

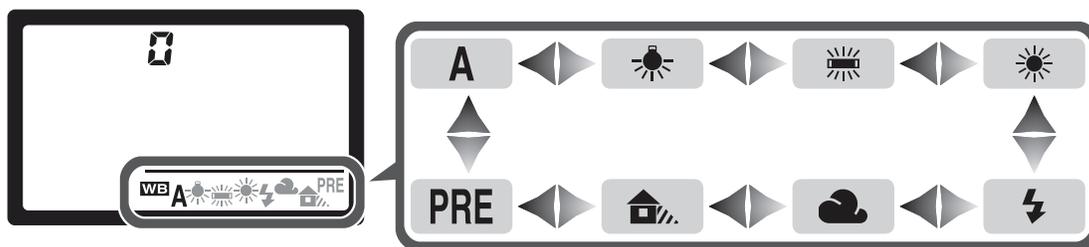
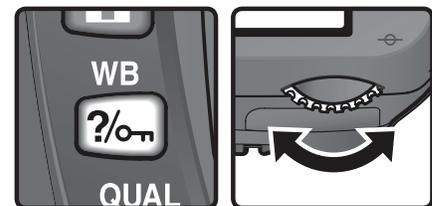


**2** Highlight the desired option and press the multi selector to the right. If **Preset** is selected, a menu of preset white balance options will be displayed (👁️ 52). Otherwise a white-balance fine-tuning dialog will be displayed (👁️ 50).



### The WB Button

When the monitor is off, white balance can be set by pressing the **WB** button and rotating the main command dial. White balance is displayed in the control panel:



### 📎 Speedlights Connected via a Sync Cable

Auto white balance may not produce the desired results when the AS-15 accessory shoe adapter is used to connect optional Speedlights via a sync cable. Use preset white balance or set white balance to **Flash** and use fine tuning to adjust white balance.

### CSM 12—BKT Set (👁️ 146)

When **WB bracketing** is selected for Custom Setting 12 (**BKT set**), the camera will create several images each time the shutter is released. White balance will be varied with each image, “bracketing” the value currently selected for white balance.

## Fine-Tuning White Balance

At settings other than **Preset**, white balance can be “fine tuned” to compensate for variations in the color of the light source or to introduce a deliberate “warm” or “cold” cast into an image. Higher settings can be used to lend images a bluish tinge or to compensate for light sources with a yellow or red cast, while lowering white balance can make photographs appear slightly more yellow or red or compensate for light sources with a blue cast. Adjustments can be made in the range +3 to –3 in increments of one. Except in **Fluorescent** mode, each increment is equivalent to about 10 mired.

White balance is fine tuned using the **White bal.** option in the shooting menu or by pressing the **WB** button and rotating the sub-command dial. At settings other than  $\pm 0$ , a ◀▶ icon appears in the control panel.

### The White Balance Menu

- 1 In the white balance menu (📷 49), highlight an option other than **Preset** and press the multi selector to the right.
- 2 Press the multi selector up or down to choose the desired value and press the multi selector to the right. The shooting menu will be displayed.

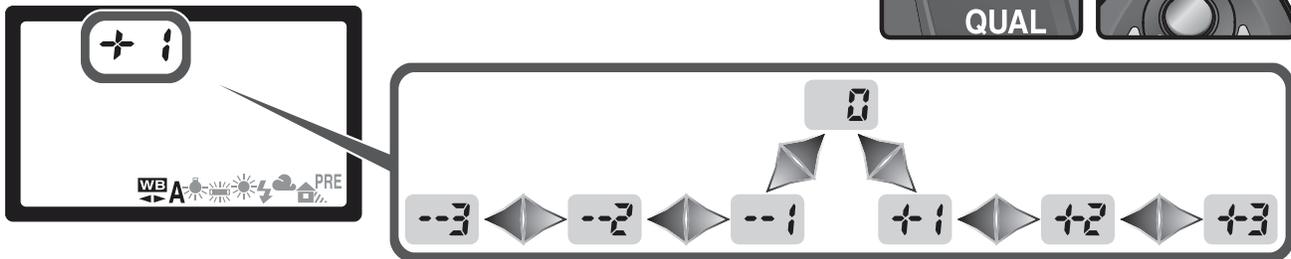
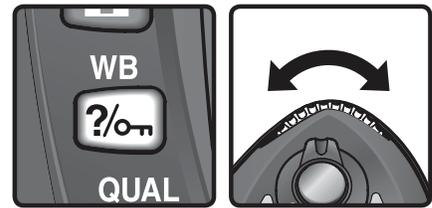


### 💡 Color Temperature

The perceived color of a light source varies with the viewer and other conditions. Color temperature is an objective measure of the color of a light source, defined with reference to the temperature to which an object would have to be heated to radiate light in the same wavelengths. While light sources with a color temperature in the neighborhood of 5,000–5,500 K appear white, light sources with a lower color temperature, such as incandescent light bulbs, appear slightly yellow or red. Light sources with a higher color temperature appear tinged with blue.

## The WB Button

When the monitor is off, white balance can be fine tuned by pressing the **WB** button and rotating the sub-command dial.



## Fine-Tuning and Color Temperature

Approximate color-temperatures for settings other than **A** (auto) are given below (values may differ from color temperatures given by photo color meters):

	Incandescent	Fluorescent*	Direct sunlight	Flash	Cloudy (daylight)	Shade (daylight)
+3	2,700 K	2,700 K	4,800 K	4,800 K	5,400 K	6,700 K
+2	2,800 K	3,000 K	4,900 K	5,000 K	5,600 K	7,100 K
+1	2,900 K	3,700 K	5,000 K	5,200 K	5,800 K	7,500 K
±0	3,000 K	4,200 K	5,200 K	5,400 K	6,000 K	8,000 K
-1	3,100 K	5,000 K	5,300 K	5,600 K	6,200 K	8,400 K
-2	3,200 K	6,500 K	5,400 K	5,800 K	6,400 K	8,800 K
-3	3,300 K	7,200 K	5,600 K	6,000 K	6,600 K	9,200 K

\* The size of the increments for **Fluorescent** reflects the wide variations in color temperature among the many different types of fluorescent light source, ranging from low-temperature stadium lighting to high-temperature mercury-vapor lamps.

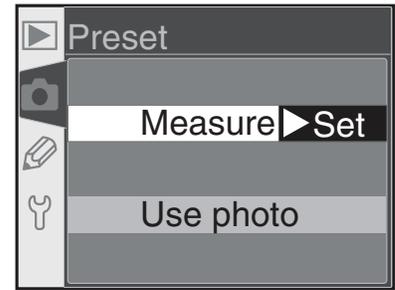
## "Mired"

Any given change in color temperature produces a greater difference in color at low color temperatures than it would at higher color temperatures. For example, a change of 100K produces a much greater change in color at 3000K than at 6000K. Mired, calculated by multiplying the inverse of the color temperature by  $10^6$ , is a measure of color temperature that takes such variation into account, and as such is the unit used in color-temperature compensation filters. E.g.:

- 4000 K–3000 K (a difference of 1000 K) = 83 mired
- 7000 K–6000 K (a difference of 1000 K) = 24 mired

## Preset White Balance

Preset white balance is used to record and recall custom white balance settings for shooting under mixed lighting, to compensate for light sources with a strong color cast, or to replicate the white balance used in an existing photo. Two methods are available for setting preset white balance:

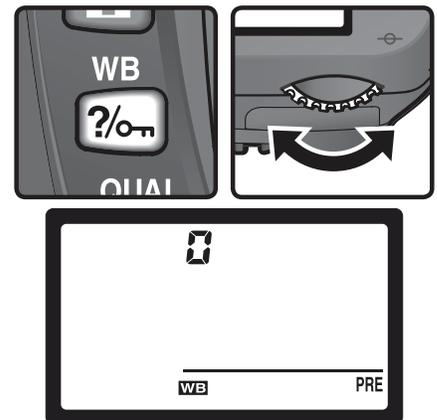


Method	Description
Measure white balance	Neutral gray or white object is placed under lighting that will be used in final photograph and white balance is measured by camera.
Copy from existing photograph	White balance value is copied from photo taken with D70 (if desired, source picture can be RAW image modified using white balance adjustment option in Nikon Capture 4 version 4.1 or later).

The camera can store only one value for preset white balance at a time; the existing value is overwritten when a new value is measured or copied. Measuring a new value for white balance automatically sets **Preset** to **Measure**.

### Measuring a Value for White Balance

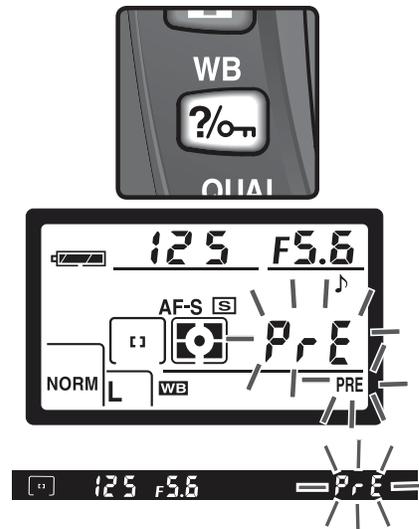
- 1 Place a neutral gray or white object under the lighting that will be used in the final photograph. In studio settings, an 18% diffusion panel can be used to make the reference object appear gray.
- 2 Select **Measure** in the **Preset** menu (👁 55) or press the **WB** button and rotate the main command dial until **PRE** is displayed in the control panel. White balance will be set to the last value selected for preset white balance; if no previous value exists, white balance will be set to 5,200 K, equivalent to **Dir. sunlight**.



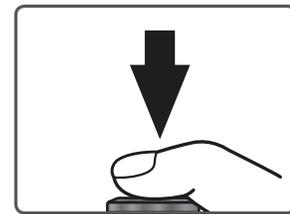
### Measuring White Balance

Preset white balance can be measured in **P**, **S**, **A**, and **M** modes. In these modes, exposure is automatically increased by one EV to ensure accurate results. In mode **M**, optimal results can be obtained by setting exposure to  $\pm 0$ EV as indicated by the electronic analog exposure display.

**3** Release the **WB** button briefly and then press the button until the **PRE** icon in the control panel starts to flash. A blinking *PrE* will also appear in the control panel and viewfinder frame-count displays.

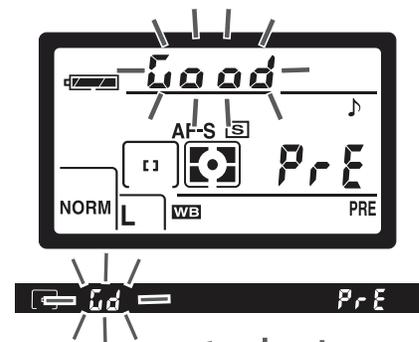


**4** Frame the reference object so that it fills the viewfinder and press the shutter-release button all the way down. The camera will measure a value for white balance and use this value when preset white balance is selected. No photograph will be recorded; white balance can be measured accurately even when the camera is not in focus.

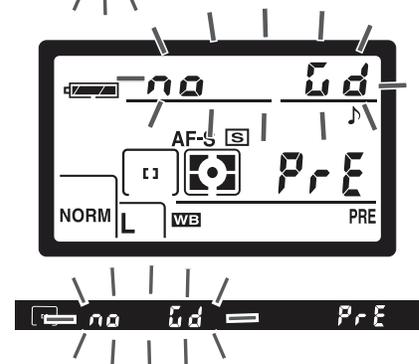


To exit without measuring a new value for white balance, press the **WB** button.

**5** If the camera was able to measure a value for white balance, *Good* will flash in the control panel, while the viewfinder will show a flashing *Gd*. To return to shooting mode, press the shutter-release button halfway or wait until the exposure meters turn off.



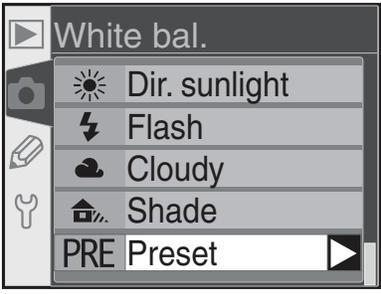
If lighting is too dark or too bright, the camera may be unable to measure white balance. A flashing *no Gd* will appear in the control panel and viewfinder. Return to Step 4 and measure white balance again.



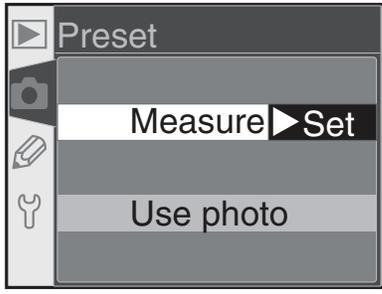
## Copying White Balance from a Photograph

To copy a value for white balance from a photograph on the memory card, display the white balance menu (📷 49) and follow the steps below:

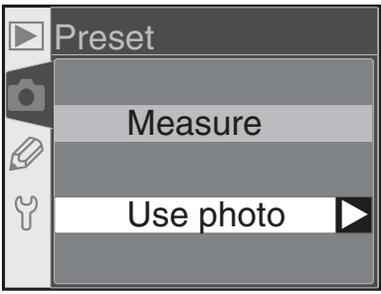
- 1



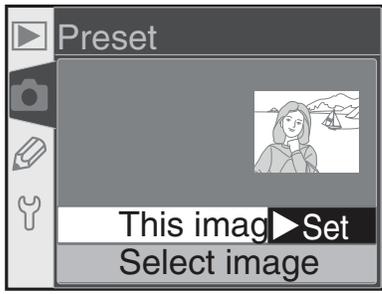
Highlight **Preset**.
- 2



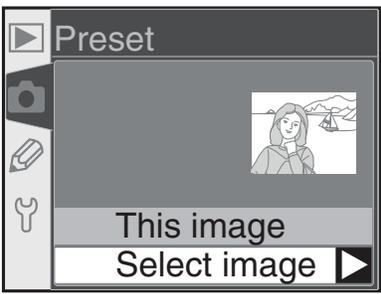
Display options.
- 3



Highlight **Use photo**.
- 4



Display current source photo.\*
- 5



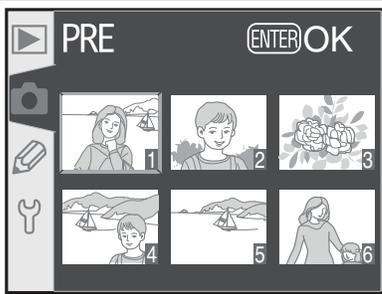
Highlight **Select image**.
- 6



Display folder list.
- 7

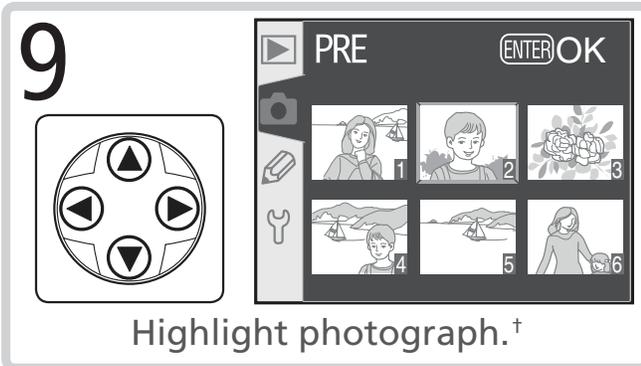


Highlight folder.
- 8

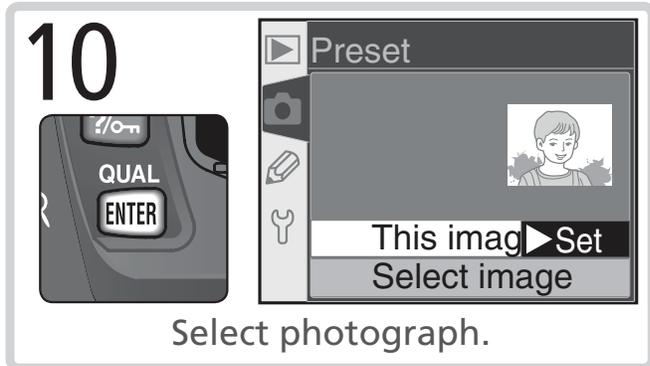


Display images in selected folder.

\* To use white balance value for current photo, proceed to Step 11. If no photo is displayed, preset white balance will be set to 5,200 K (**Dir. sunlight**).



Highlight photograph.<sup>†</sup>

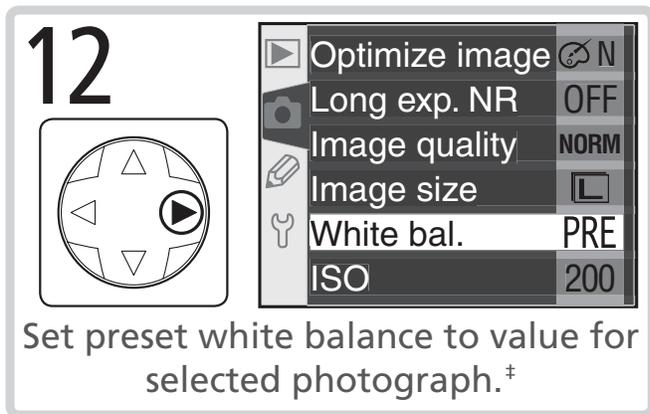


Select photograph.

<sup>†</sup> Images displayed may include those created by other cameras, but only photographs created with D70 can be used as source for preset white balance.



Highlight **This image**.



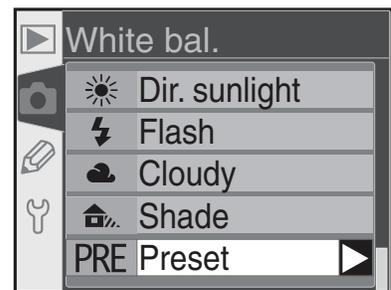
Set preset white balance to value for selected photograph.<sup>‡</sup>

<sup>‡</sup> To select different photo, repeat steps 5–12.

### Using the Current Value for Preset White Balance

To set white balance to the value currently selected for preset white balance:

**1** Highlight **Preset** in the white balance menu (📷 49) and press the multi selector to the right.



**2** Highlight **Measure** and press the multi selector to the right to set white balance to the current value for preset white balance and return to the shooting menu.

