

The camera settings shown below offer a starting point for taking pictures with the Nikon D100 digital camera. Nikon includes a help manual with each camera. We encourage you to familiarize yourself with the settings and usage of this camera.

A Recommended Camera Accessories

- Nikon D100 Camera Body
- Nikkor 60mm Micro Lens
- Nikon SB-29s Ring Flash
- 128MB CompactFlash card (multiple camera cards optional)



NOTE: We recommend that you use the 60mm lens as opposed to a more traditional 105mm lens because the camera has a built-in magnification of 1.5x. A 60mm lens is equivalent to a 90mm lens on a 35mm camera. The normal 105mm lens that is recommended for use with 35mm film cameras is too long. The user would have to take the photos from more than 7 feet away, and with the flash this far from the patient's face, the images may be darker.

We recommend purchasing two CompactFlash cards and using a Card Reader to import images to the Quick Ceph program. Although the camera can be connected directly to the computer using a USB cable, the transfer process would use the camera batteries unnecessarily and would make the camera unavailable to take additional photos. Two cards allow the user to transfer images with one card while taking additional photographs with the other.

B Camera Usage

Setting Up the Nikon D100

- 1 Before taking photographs, the image size on the camera needs to be changed to the Medium setting. This yields images that have a resolution of 2240 x 1488 pixels, which is enough for QC2000. To do this, rotate the **Function Dial** (found on the left side of the camera) to the "QUAL" mode. Then, rotate the **Sub-Command Dial** (found on the front of the camera) until the "M" setting appears in the top LCD display. Make sure the "Norm" icon is also displayed, as shown in the sample to the right.
- 2 Next, set the camera to the "Aperture Priority" mode by rotating the **Function Dial** to the "A" mode.
- 3 The SB-29s ring flash should be mounted to the hot shoe on the top of the camera, and the ring should be mounted on the lens. Depending on the lens size, you may need to use a lens adapter to connect the flash to the lens. The camera bag included with the SB-29s ring flash contains three different sized lens adapters to allow you to mount the flash unit.



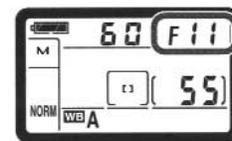
Function Dial (QUAL)



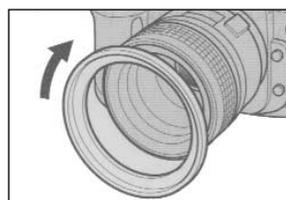
Sub-Command Dial



Function Dial (A)



Ideal settings for the extraoral photographs, displayed on top LCD screen.



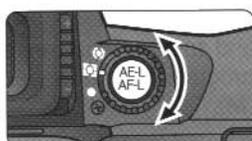
Lens Adapter

Tips for Taking Extraoral Images

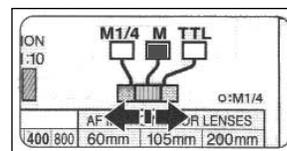
- 1 When taking the extraoral images with the 60 mm lens, the camera should be held approximately 5 feet from the patient's face. Set the aperture to "F11" by rotating the **Sub-Command Dial** clockwise. If the F value does not appear, hold down the shutter button half-way to display the F value. You can then change the F-stop value. Then, rotate the **Metering Selector** on the back of the camera to select the "Matrix Metering" option.
- 2 The SB-29s ring flash can be attached to the lens or attached to the mount above the lens. It needs to have the flash intensity set to the highest manual setting for the extraoral images. On the back of the Controller unit, slide the **Flash Mode Selector** to the "M" mode, as shown on the image below.



Sub-Command Dial



Metering Selector



SB-29s Flash Intensity

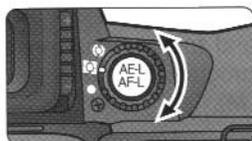
- 3 When you are taking the lateral head image, make sure the patient’s head is level, with no tilting or canting. We suggest that you place a mirror with a vertical line in front of the patient and have them align themselves to it. You should capture the photo with the camera lens perpendicular to the patient’s Frankfurt Horizontal plane. These steps ensure the most accuracy when you align the photos to the x-ray tracings.
- 4 We suggest using either a **wall mounted lightbox with a built-in slave flash** or a **bare slave flash** to eliminate shadows on the facial photos. If you are using a bare slave flash, we have found that it works best when placed precisely behind the patient’s head, facing toward a white background. You may need to adjust the brightness on the background lighting that you use in order to generate accurate soft tissue hues. Overhead fluorescent lighting may also affect the color of the images. You can replace the fluorescent bulbs with halogen lighting to produce better color images. Professional photographers spend time setting up their studios for just the right picture. We also have to invest time in setting up our practices for the right lighting for digital images.

Tips for Taking Intraoral Images

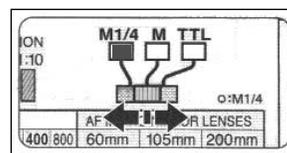
- 1 With the 60 mm lens, the camera should be held between 1 to 2 feet from the patient’s face. Set the aperture to “F22” by rotating the **Sub-Command Dial** (found on the front of the camera) clockwise. If the F value does not appear, hold down the shutter button half-way to display the F value. You can then change the F-stop value. Then, rotate the **Metering Selector** on the back of the camera to select the “Center-Weighted Metering” option.
- 2 The SB-29s ring flash can attached to the lens or attached to the mount above the lens. It needs to have the flash intensity set to the lowest manual setting for the intraoral images. On the back of the Controller unit, slide the **Flash Mode Selector** to the “M1/4” mode, as shown on the image below.



Sub-Command Dial

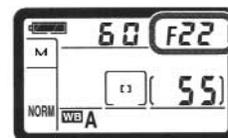


Metering Selector



SB-29s Flash Intensity

- 3 The Nikon D100 requires a well-lit subject in order to focus correctly. If the subject is not brightly lit, as is sometimes the case with occlusal pictures, images taken with the camera may be out of focus, or the camera may simply not allow the image to be taken. To prevent this from happening, make sure to provide enough intraoral lighting, either through ambient light sources or with a dental light. If the patient is sitting in a dental chair, have them tilt their head back when taking lower occlusal pictures to maximize the amount of light entering the intraoral cavity.
- 4 When taking the intraoral images, we recommend that you use the view finder to center the image within the frame while leaving a slight margin on both sides. This allows the Quick Ceph program to crop the image better. If the subject fills up too much space on the image, the photo may not be able to be cropped correctly. When you are taking the frontal and buccal intraoral pictures, make sure to take the picture at a 90° angle to the teeth. Also, try to align the horizontal plane of the camera with the patient’s occlusal plane. This will save time, as you will not have to rotate the image inside Quick Ceph later.



Ideal settings for the intraoral photographs, displayed on top LCD screen.

C Taking Images of X-Rays For QC2000

Using the settings provided in this document, the Nikon D100 equipped with a 60mm lens can be used to take digital images of x-rays that are 100% the size of the original when imported into QC2000. To do this, place the x-ray on a lightbox and situate the camera so that the distance between the lens and the x-ray is exactly **1015mm**. This can be done by mounting the camera on a camera stand oriented vertically, or by placing both the lightbox and the camera horizontal to each other.

Once the image is taken, it can be transferred to QC2000. Make sure not to resize it, as that will affect the calibration. Follow the steps outlined in Chapter 2 and 3 of the QC2000 manual to import the image into the program.

Please Note: We only recommend this camera. We do not manufacture it. If you have technical difficulties, please contact Nikon Support at **(800) 645-6689**.