

Exploring the Nikon Creative Lighting System

Like most sophisticated camera equipment, Nikon Speedlights are complicated devices with many different parts and features. To get the most out of your Speedlight or Speedlights, it helps to be familiar with all of the moving parts. In this chapter, I dissect each of the Speedlights and explain what each button, switch, dial, and lever does, as well as discuss some of the accessories and the different cameras that can be used. By the end of this chapter you should be familiar with all of the different accessories and terminology.

The Nikon Creative Lighting System, or CLS, mainly consists of a couple of different components: a CLS-compatible camera and a Speedlight. This is just the start, however, because CLS is a completely modular system that can comprise a camera and many different Speedlights functioning as commanders and/or remotes.



Knowing when and how to use such features as slow sync allows you to add creative aspects to your images.

Main Features and Functions

Nikon Speedlights offer many different features and functions, each of which is designed to make Nikon Speedlights a flexible and powerful tool for any photographer — from a complete newcomer to photography to a seasoned professional.

Once you understand what each of these features do and how to use them, you can unlock your creative abilities by utilizing them to get the utmost control out of your Speedlights.

The main features and functions of the Nikon Creative Lighting System are as follows:

- ▶ **i-TTL/i-TTL BL.** This is Nikon's most advanced flash metering system. It uses pre-flashes fired from the Speedlight to determine the proper flash exposure. The pre-flashes are read by a 1005-pixel RGB metering sensor. The information is then combined with the information from matrix metering, which is a reading of how much available light is falling on the subject. The Speedlight uses this information to decide how much flash exposure is needed (i-TTL) or to balance the flash output and ambient light for a more natural-looking image (i-TTL BL). All CLS-compatible cameras can use this function when attached to any of the CLS Speedlights. The built-in flash also uses i-TTL technology.
- ▶ **Advanced Wireless Lighting (AWL).** This is probably the most exciting and useful feature of the CLS and probably the main reason why you bought this book. AWL allows you to control up to three groups of flashes, which gives you a total of four groups if you use the built-in flash or an SB-800 or SB-900 Speedlight in the hot shoe as a commander. You can control an unlimited amount of Speedlights assigned to each group with one single commander, which can be a built-in flash, an SB-800, SB-900, or SU-800. This option is available on all cameras when using an SB-900, SB-800 or SU-800 as a commander and another Speedlight as a remote. Cameras with a built-in flash that acts as a commander can also use this feature. The D40/D40X, D50, D60, and D5000 built-in flash doesn't support this feature.
- ▶ **AUTO FP High-Speed Sync.** This feature allows you to use a shutter speed that's faster than the rated sync speed for your camera. This is achieved by firing a series of low-power flashes during the exposure. This feature is used for adding fill flash to an action shot that requires a fast shutter speed. It's also handy when using a fill flash on an outdoor portrait that requires a wide aperture, which necessitates a fast shutter speed. Please note that this feature is not available with all camera bodies.



For more information on sync speed, see Chapter 3.

- ▶ **Flash Value Lock (FV Lock).** This feature enables you to lock the flash exposure to maintain a consistent exposure over a series of images. It's also used to ensure proper flash exposure when recomposing your shot. When enabling the FV Lock the camera fires the pre-flash to get the correct flash exposure reading. This reading is locked giving you the opportunity to recompose the shot without causing the flash output level to change, or to wait for just the right moment or expression. You essentially make the pre-flash several seconds before the exposure instead of milliseconds before. This feature is available with all cameras and flash combinations with the exception of the D40/D40X, D50, D60, D3000, and D5000. In most cases, the FV Lock must be assigned to a Function button using the camera's Custom Settings menu.
- ▶ **Multi-Area AF-Assist Illuminator.** The SB-900, SB-800, SB-600, and SU-800 have a built-in LED that projects an array onto your subject when shooting in low light to assist the camera's AF system in locking focus on a subject. This feature works with all camera and flash combinations. Note that the AF-Assist Illuminator does not function when the camera is in Continuous AF or Manual focus.
- ▶ **Flash Color Information Communication.** As the flash duration changes, the color temperature of the flash output changes as well. Longer flash durations are required for bright output and cause the color temperature to shift a little cooler. The opposite is true for shorter duration flashes; the color temperature tends to get warmer. When your camera is set to Auto White Balance, the Speedlight communicates this information to your camera, which allows the camera to compensate for the color shift. This can be more accurate than simply setting your camera to Flash WB, which is fixed at 5500K. This feature is available with all camera and flash combinations. Please note that the camera WB must be set to Auto for this feature to be enabled.

Depending on your camera and Speedlight combination, all of these features may or may not be available. Certain cameras, especially the entry-level models, don't allow the use of some features of the Nikon CLS such as Auto FP High-Speed Sync and FV Lock. Your camera must be CLS-compatible in order to take advantage of any of these features. Here is a list of current CLS-compatible cameras:

- ▶ **F6**
- ▶ **D3/D3X**
- ▶ **D2X / D2H / D2Hs**

- ▶ **D700**
- ▶ **D300/D300s**
- ▶ **D200**
- ▶ **D70/D70s**
- ▶ **D80**
- ▶ **D90**
- ▶ **D40/D40X**
- ▶ **D50**
- ▶ **D60**
- ▶ **D3000**
- ▶ **D5000**



The Nikon COOLPIX P5000, P5100, and P6000 are equipped with a hot shoe for an accessory Speedlight. Although they can accept the SB-400, SB-600, SB-800, and SB-900 Speedlights, these cameras aren't CLS compatible. They use i-TTL metering, but cannot perform any Advanced Wireless Lighting or other CLS functions. The Commander function is disabled when an SB-900, SB-800, or SU-800 is attached to the camera.

Understanding DX and FX

As you may already know Nikon offers two different sensor sizes within their line of dSLR cameras, DX and FX. The DX format sensor is approximately 24×16 mm while the FX format is 36×24 mm.

SLR camera lenses were designed around the 35mm film format. Photographers use lenses of a certain focal length to provide a specific field of view. The field of view, also, called the angle of view, is the amount of the scene that is captured in the image. This and is usually described in degrees. For example, when a 16mm lens is used on a 35mm camera, it captures almost 180-degrees horizontally of the scene, which is quite a bit. Conversely, when using a 300mm focal length, the field of view is reduced to a mere 6.5-degrees horizontally, which is a very small part of the scene. The field of view was consistent from camera to camera because all SLRs used 35mm film, which had an image area of 24×36 mm.

With the advent of digital dSLRs, the sensor was made smaller than a frame of 35mm film to keep costs down because the sensors are more expensive to manufacture. This sensor size was called APS-C, or in Nikon terms, the DX-format. The lenses that are used with DX-format dSLRs have the same focal length they've always had, but because the sensor doesn't have the same amount of area as the film, the field of view is effectively decreased. This causes the lens to provide the field of view of a longer focal lens when compared to 35mm film images.

Fortunately, the DX sensors are a uniform size, thereby supplying consumers with a standard to determine how much the field of view is reduced on a DX-format dSLR with any lens. The digital sensors in Nikon DX cameras have a 1.5X crop factor, which means that to determine the equivalent focal length of a 35mm or FX camera, you simply have to multiply the focal length of the lens by 1.5. Therefore, a 28mm lens provides an angle of coverage similar to a 42mm lens, a 50mm is equivalent to a 75mm, and so on.

What does this mean to you and your Speedlights? Not much actually. The SB-600 and SB-800 were designed to cover the full-frame format so, although the widest setting shown is 14mm, that is the FX setting, which, in terms of the crop factor, allows coverage for a 10mm lens on DX format ($10 \times 1.5 = 15\text{mm}$), although you will get some slight light fall off when using the 10.5mm fisheye lens.

The SB-900 was designed to automatically recognize between DX and FX sensors and is optimized to provide even light coverage for either format all the way up to the 10.5mm fisheye lens

Anatomy of the Speedlight

For the most part, Speedlights are all pretty similar. Each Speedlight has a few parts that are common to all Speedlights. The higher up the chain you go and the more expensive the Speedlight gets, the more features, knobs, dials, and bells and whistles you find.

Although some Speedlights, such as the SB-900, seem to have more dials and buttons than you can shake a stick at, it's pretty easy to master the controls once you know what each button and dial is intended for. That's where this chapter comes in. I cover each part of the Speedlight to help you learn what it does so when it comes time to master the settings and modes, you are familiar with the layout of your Speedlight.

SB-400

The SB-400 is the simplest Speedlight. For its diminutive size, this little flash is a powerhouse.

- ▶ **Tilting flash head.** The flash head contains the business part of your Speedlight, the *flashtube*. Simplified, the flashtube is a sealed glass tube that contains xenon gas and electrodes that pass a high-voltage electric charge through the gas that makes it light up very brightly for a relatively brief duration. The flash head of SB-400 can be tilted up vertically to execute a bounce flash. The head can be pointed straight ahead horizontally or tilted vertically at a 60-, 75-, or 90-degree angle. The flash head is optimized for 18mm coverage with a DX camera and 28mm with an FX camera.



Figure courtesy of Nikon, Inc.

1.1 The SB-400



For more information on bounce flash, see Chapter 3.

- ▶ **Battery chamber lid.** Sliding this cover toward the back of the SB-400 opens the battery chamber where you install the two AA batteries.
- ▶ **Mounting foot.** This slides into the hot shoe on top of your camera. The mounting foot has contacts that convey the flash information between the camera and the Speedlight.
- ▶ **On/Off switch.** Sliding this switch turns the Speedlight unit on or off. Be sure this is switched to Off before attempting to mount the SB-400 to your camera to prevent any accidental damage that could be caused by any electrical charges between the contacts.
- ▶ **Ready light.** When the ready light is on, your SB-400 is fully charged and ready to fire at full power. This light also blinks as a warning if there is a problem with the Speedlight or camera it is attached to.
 - **3 seconds at 4 Hz.** If immediately following your shot the ready light blinks at this frequency, your image may be underexposed. Adjust your ISO setting higher, open your aperture, or move closer to the subject to increase the exposure.

- **40 seconds at 2 Hz.** When the ready light blinks at this frequency, the batteries are nearly depleted and need to be replaced or recharged.
 - **1/2 second at 8 Hz.** When the ready light repeatedly flashes at this rate, the SB-400 is attached to a non-CLS-compatible camera. The SB-400 cannot be used with non-CLS cameras.
 - **Repeatedly at 1 Hz.** When the ready light is repeatedly blinking one time per second, the SB-400 is overheated and should be allowed to cool down before shooting more flash exposures.
- **Mounting foot locking lever.** Move this lever to the right to lower the mounting pin, which locks the SB-400 in place in the camera's hot shoe.

SB-600

The SB-600 is a full-functioning Speedlight that can do much more than the SB-400, but not quite as much as the SB-900 or SB-800. The SB-600 is a big step up from the SB-400 and has many more buttons to change the different settings and make adjustments. The SB-600 is still pretty easily understood especially when compared to the SB-900 and SB-800.

- **Zooming/tilting flash head.** This is where the flashtube is located. Inside is a mechanism that moves the flashtube back and forth inside the flash head behind the Speedlight's lens to provide flash coverage for lenses of different focal lengths. The zooming flash head allows the Speedlight to conserve energy by focusing the flash output on the appropriate area. The flash head is adjustable; it can be tilted upward to 45, 60, 75, or 90 degrees. It can also be moved horizontally 30, 60, 90, 120, 150, or 180 degrees to the left or 30, 60, or 90 degrees to the right.
- **Wide-flash adapter.** This built-in diffuser provides you with the ability to use the Speedlight with a lens as wide as 14mm without having light falloff at the edges of the image. The diffuser spreads the light out a bit more, which gives you even illumination with wide-angle lenses. The SB-600 doesn't recognize DX or FX; however, it is set up to cover FX sensors or 35mm film.
- **Flash head lock release button.** Pressing this button releases the flash head lock allowing you to adjust the flash head angle vertically or horizontally for bounce flash.



1.2 The front of the SB-600 Speedlight

- **Battery compartment lid.** Sliding the battery lid downward gains you access to the battery compartment so you can install the four AA batteries that power the Speedlight.

- ▶ **Light sensor for TTL wireless flash.** This sensor reads signals from commander units enabling wireless flash.

- ▶ **Wireless remote ready light.** When the SB-600 is being used as a remote flash this LED blinks to let you know that the flash is powered up and ready to be fired.

- ▶ **AF-Assist Illuminator.** This emits an LED array to achieve focus in low-light situations.

- ▶ **External AF-assist contacts.** These electronic contacts are for use with the optional SC-29 TTL remote cord. This allows the SC-29's AF-assist beam to function when using your SB-600 off-camera.

- ▶ **Mounting foot.** This slides into the hot shoe on your camera body and locks down with a lever. The hot shoe mounting foot has electronic contacts that enable the camera and Speedlight to communicate flash output and white balance information.

- ▶ **Flash head tilting angle scale.** This scale allows you to see to which angle the flash head is tilted: 45, 60, 75, or 90 degrees.



1.3 Wide-flash adapter



1.4 External AF-assist contact and the hot shoe mounting foot

- **Flash head rotating angle scale.** This scale enables you to see where the flash head is set to when turned horizontally left. The scale markings include 30°, 60°, 90°, 120°, 150°, and 180°. To the right it can be adjusted 30°, 60°, and 90°.
- **LCD panel.** The LCD panel is where all of the Speedlight settings are displayed.



1.5 Flash head rotating angle scale



1.6 The back of the SB-600 Speedlight

- ▶ **Ready light.** When this light is on, the Speedlight is ready to fire. After the Speedlight fires at full power using TTL, this light blinks indicating a possible underexposure.
- ▶ **Control buttons.** These buttons are used to set and change the different settings on the SB-600. The Control buttons are covered more in depth in the next section.
- ▶ **Mounting foot locking lever.** This lever locks the Speedlight into the hot shoe or the AS-19 Speedlight stand.

Control buttons

The control buttons are used to change some of the main settings of the SB-600 such as the flash mode and zoom head setting. Some of these are set automatically but can be overridden by pressing the appropriate button.

- ▶ **On/Off button.** Press the On/Off button for about a half-second to turn the SB-600 on or off.
- ▶ **Flash button.** Press this button to test fire the SB-600.
- ▶ **Zoom button.** Pressing this button changes the zoom of the flash head to change coverage for different focal-length lenses and allows coverage for 24mm to 85mm lenses. 14mm coverage is achieved with the built-in wide-angle diffuser.
- ▶ **+/- buttons.** The +/- buttons are used to change the values and settings. Depending on the flash mode the values and settings will be different.
 - **TTL/TTL BL.** The +/- buttons allow you to set the flash compensation of the Speedlight to underexpose or overexpose from the camera's TTL reading. The flash compensation can be set +/- 3 stops in 1/3-stop increments.
 - **M.** The +/- buttons are used to set the flash exposure manually from 1/1 to 1/64. These settings are also adjustable in 1/3-stop increments.



1.7 SB-600 control panel

- **CSM.** When in the Custom Settings Mode, the +/- buttons are used to cycle through the different custom settings.



The Custom Settings menu is covered in detail in Chapter 2.

- ▶ **Mode button.** The Mode button allows you to switch among the available flash modes. The modes available with the SB-600 are
 - **TTL BL.** iTTL balanced fill flash. The exposure is determined by the camera and matched with the ambient light.
 - **TTL.** iTTL flash. The exposure is determined by the camera to sufficiently illuminate the subject that is focused on.
 - **M.** Full Manual mode. The photographer determines the flash power.



For more detailed information on flash modes, see Chapter 2.

Combination buttons

There are certain functions and settings that are accessed by pressing two buttons simultaneously. The following list describes the buttons and how they work together.

- ▶ **Zoom + Mode.** When shooting TTL or TTL BL and you get an underexposure warning (blinking ready light), pressing these two buttons simultaneously displays the underexposure value from the TTL reading on the upper-right-hand corner of the LCD.
- ▶ **Mode + On/Off.** Pressing these two buttons together and holding them for about 2 seconds resets the SB-600 settings to factory default. All settings are reverted, even the Custom Settings.
- ▶ **Mode + minus.** When the Mode button and the minus button are pressed at the same time, the control buttons are locked to prevent any accidental changes to the settings. Press and hold these buttons again to unlock.



The lock does not affect the flash button and the On/Off button.

- ▶ **Zoom + minus.** Pressing these two buttons for 2 seconds gains access to the Custom Settings Menu (CSM). For more information on the CSM, see Chapter 2.

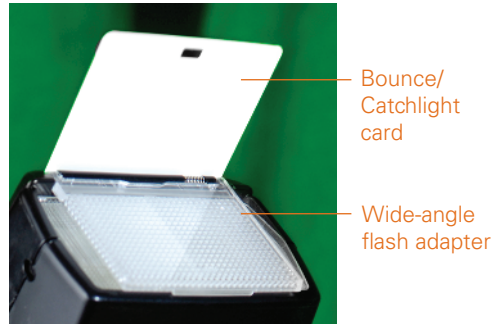
SB-800

The SB-800 was initially Nikon's top-of-the-line CLS Speedlight, but it was recently replaced by the SB-900. Although the SB-900 has some added functionality, the SB-800 is still no slouch. It can act as an accessory flash on-camera, or a commander unit or even a remote flash. It has more available flash modes than the SB-600 and a few more buttons to add functions.



1.8 The front of the SB-800 Speedlight

- ▶ **Zooming/tilting flash head.** This is where the flashtube is located. Inside is a mechanism that zooms the flashtube back and forth to provide flash coverage for lenses of different focal lengths. The zooming flash head allows the Speedlight to conserve energy by focusing the flash output on the appropriate area. The flash head is adjustable; it can be tilted upward to 45, 60, 75, or 90 degrees or downward to 7 degrees. It can also be moved horizontally 30, 60, 90, 120, 150, or 180 degrees to the left or 30, 60, or 90 degrees to the right.
- ▶ **Bounce card.** When using the SB-800 for bounce flash, pulling out the bounce card redirects some of the light forward, which allows you to achieve a highlight in your subject's eyes (catchlight), giving the eyes a brighter, livelier appearance. On top of the bounce card is a list of some of the button features for reference.
- ▶ **Wide-flash adapter.** This built-in diffuser provides you with the ability to use the Speedlight with a lens as wide as 14mm without having light falloff at the edges of the image. The diffuser spreads the light out a bit more giving you even illumination with wide-angle lenses.



1.9 Wide-flash adapter and built-in bounce card

- ▶ **Flash head lock release button.** Pressing this button releases the flash head lock allowing you to adjust the flash head angle vertically or horizontally for bounce flash.
- ▶ **Battery compartment lid.** Sliding the battery lid downward gains you access to the battery compartment so you can install the four AA batteries that power the Speedlight. This can also be removed and replaced with the SD-800 Quick-Recycling Battery Pack.
- ▶ **Light sensor for TTL wireless flash.** This sensor reads signals from commander units, enabling wireless flash.
- ▶ **Light sensor for automatic non-TTL flash.** This sensor reads the light reflected off of the subject telling the flash when to shut off when operating in AA, aperture automatic, or A, non-TTL automatic.
- ▶ **AF-Assist Illuminator.** This emits an LED array to provide additional contrast to help achieve focus in low-light situations.

- ▶ **External power source terminal.** Nikon's optional external power sources can be plugged in to this terminal. These power sources include the SC-7 DC unit, the SD-8A high-performance battery pack, and the SK-6 power bracket unit. The terminal is protected by a removable cover emblazoned with the Nikon logo.
- ▶ **External AF-assist contacts.** These electronic contacts are for use with the optional SC-29 TTL remote cord. This allows the SC-29's AF-assist beam to function when using your SB-800 off-camera.
- ▶ **Mounting foot.** This slides into the hot shoe on your camera body and locks down with a lever. The hot shoe mounting foot has electronic contacts that enable the camera and Speedlight to communicate flash output and white balance information.
- ▶ **Flash head tilting angle scale.** This scale allows you to see at which angle the flash-head is tilted to: 45, 60, 75, or 90 degrees.
- ▶ **Flash head rotating angle scale.** This scale enables you to see where the flash head is set to when turned horizontally left. The scale markings include 30, 60, 90, 120, and 150 degrees. To the right it can be adjusted to 30, 60, and 90 degrees.
- ▶ **Modeling flash illuminator button.** Pressing this button causes the Speedlight to fire repeatedly very quickly at low power to allow a preview of how the shadows from the lighting will appear on the subject.
- ▶ **TTL multiple flash terminal.** Used for linking more than one flash together using TTL metering. It requires a Nikon TTL flash cord such as the SC-27, SC-26, SC-19, or SC-18.
- ▶ **PC sync terminal.** This terminal allows you to trigger the SB-800 using a PC sync cord. The sync cord connects to the camera via the camera's PC sync terminal with a PC to PC sync cord. If the camera doesn't have a PC sync terminal, you can use a hot shoe adapter such as the Wein Safe-Sync or the Nikon AS-15 PC sync terminal adapter. These adapters slide into the hot shoe of your camera.



1.10 TTL multi-flash terminal (top) and the PC sync terminal (bottom)



The PC sync terminal does not connect your flash to your personal computer (PC). The term PC as it relates to flash is derived from Prontor-Compur, which were two manufacturers of leaf-type shutters in the early 1900s.

- ▶ **LCD panel.** The LCD panel is where all of the Speedlight settings are displayed.

- **Ready light.** When this light is on the Speedlight is ready to fire. After the Speedlight fires at full power using TTL, this light blinks indicating a possible underexposure.
- **Mounting foot locking lever.** This lever locks the Speedlight into the hot shoe or the AS-19 Speedlight stand.

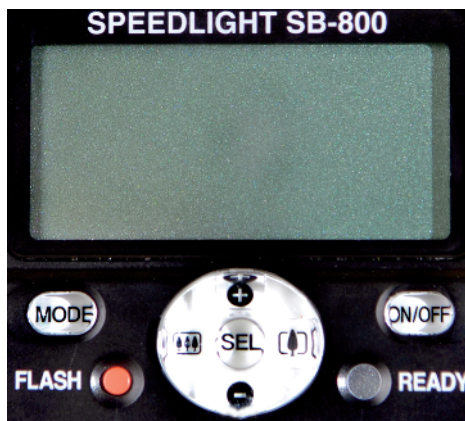


1.11 The back of the SB-800 Speedlight

Control buttons

The control buttons on the SB-800 are a bit different from the ones on the SB-600. Like the SB-600, the control buttons are used to change some of the main settings such as the flash mode and zoom head setting.

- ▶ **On/Off button.** Press the On/Off button for about a half-second to turn the SB-800 on or off.
- ▶ **Flash button.** Pressing this button test fires the SB-800 to check output levels or to simply confirm that the Speedlight is working.
- ▶ **Multi-selector button.** The main button on the SB-800 is a multi-selector button. It can be pressed up and down, left and right, or in the center.
 - **The up button has the + symbol and the down button has the – symbol.** The up and down buttons are used to change the values of whatever items are highlighted.
 - **The left and right buttons are labeled with icons representing trees.** The left button has three trees symbolizing wide angle and the right button has one tree, meaning telephoto. The buttons are used to change the zoom of the flash head for different lens coverage from 24mm wide angle to 105mm telephoto.
 - **The center button is the Select button.** This button is used to select an item to be highlighted for change. The options will be different depending in which mode your Speedlight is set to operate (TTL, M, AA, and so on). When this button is pressed for 2 seconds, it takes you to the Custom Settings Menu (CSM). The CSM is used to set up specific functions of the SB-800, such as the wireless flash modes, ISO settings, the power zoom function, and many other things.



1.12 SB-800 control panel



The Custom Settings Menu is covered in detail in Chapter 2.

- **Mode button.** This button is used to cycle among the different flash modes of the SB-800 Speedlight. The different modes are
- **TTL BL.** iTTL balanced fill flash. The exposure is determined by the camera and matched with the ambient light.
 - **TTL.** iTTL flash. The exposure is determined by the camera to sufficiently illuminate the subject that is focused on.
 - **AA.** Aperture-based automatic mode. The photographer enters the aperture value and the Speedlight determines the flash power using data collected from the camera such as aperture, ISO, distance, and exposure compensation.
 - **A.** Non-TTL Auto Flash. This mode uses the SB-800's sensor and determines the flash output by measuring the light reflected back from the subject.
 - **GN.** Distance-based automatic mode. The photographer enters the distance to the subject and the Speedlight determines the flash power.
 - **RPT.** Repeating flash mode. This fires a series of flashes at a rate determined by the photographer.
 - **M.** Manual flash mode. The photographer determines the flash output.



For more detailed information on flash modes, see Chapter 2.

Combination buttons

On the SB-800, pressing two buttons simultaneously can display custom menus or affect certain settings. These combination button presses are listed on top of the SB-800 bounce card for quick reference.

- **Mode + Select.** When shooting TTL or TTL BL and you get an underexposure warning (blinking ready light), pressing these two buttons simultaneously displays the underexposure value from the TTL reading on the upper-right-hand corner of the LCD.
- **Mode + On/Off.** Pressing these two buttons together and holding them for about 2 seconds resets the SB-800 settings to factory default. All settings are reverted, even the custom settings.
- **On/Off + Select.** When the on/off button and the Select button are pressed at the same time, the control buttons are locked to prevent any accidental changes to the settings. Press and hold these buttons again to unlock.



The lock does not affect the flash button and the On/Off button.

SB-900

The SB-900 is Nikon's newest Speedlight. It has the same functions as the SB-800 with a newly designed user interface as well as more automatic and custom settings features. The SB-900 has a new Command dial that's unlike anything on any previous Nikon Speedlight.



1.13 Front of the SB-900

- ▶ **Zooming/tilting flash head.** This is where the flashtube is located. Inside is a mechanism that moves the flashtube back and forth inside the flash head behind the Speedlights lens to provide flash coverage for lenses of different focal lengths. The zooming flash head allows the Speedlight to conserve energy by focusing the flash output on the appropriate area. The flash head is adjustable; it can be tilted upward to 45, 60, 75, or 90 degrees, or downward to 7 degrees. It can also be moved 180 degrees horizontally to the right or left.
- ▶ **Bounce card.** When using the SB-900 for bounce flash, pulling out the bounce card redirects some of the light forward and allows you to achieve a highlight in your subject's eyes, which gives the eyes a brighter livelier appearance.
- ▶ **Wide-flash adapter.** This built-in diffuser provides you with the ability to use the Speedlight with a lens as wide as 14mm (FX) or 11mm (DX) without having light falloff at the edges of the image. The diffuser spreads the light out a bit more giving you even illumination with wide-angle lenses.



The SB-900 can recognize whether an FX or DX camera is attached and adjusts the flash head for the appropriate format.

- ▶ **Filter detector.** The sensor detects when a compatible Nikon filter is attached to the SB-900 flash head using the SZ-2 Color Filter Holder. The sensor reads the encoded filter and sends the flash filter information to the camera so that the WB can be adjusted automatically when the camera's WB is set to Auto or Flash. This information is only used with cameras that are compatible with the filter detection system (D90, D300s, D700, and D3 series).
- ▶ **Flash head lock release button.** Pressing this button releases the flash head lock allowing you to adjust the flash head angle vertically or horizontally for bounce flash.



1.14 SB-900 wide-flash adapter, bounce card, and filter detector

- ▶ **Battery chamber lid.** Sliding the battery lid downward gains you access to the battery compartment so you can install the four AA batteries that power the Speedlight.
- ▶ **Light sensor for TTL wireless flash.** This sensor reads signals from Commander units enabling wireless flash.
- ▶ **Light sensor for automatic non-TTL flash.** This sensor reads the light reflected off of the subject telling the flash when to shut off when operating in AA, aperture automatic, or A, non-TTL automatic.
- ▶ **Wireless remote ready light.** When the SB-900 is being used as a remote flash, this LED blinks to let you know that the flash is powered up and ready to be fired.
- ▶ **AF-Assist Illuminator.** This emits an LED array to provide additional contrast to help achieve focus in low-light situations.
- ▶ **External power source terminal.** Nikon's optional external power sources can be plugged in to this terminal. These power sources include the SC-7 DC unit, the SD-8A high-performance battery pack, and the SK-6/SK-6A power bracket unit.



1.15 External power source terminal with the cover off and on

- ▶ **External AF-assist contacts.** These electronic contacts are for use with the optional SC-29 TTL remote cord. This allows the SC-29's AF-assist beam to function when using your SB-900 off-camera with the TTL cord.
- ▶ **Mounting foot.** This slides into the hot shoe on your camera body and locks down with a lever. The hot shoe mounting foot has electronic contacts that enable the camera and Speedlight to communicate flash output and white balance information.

- ▶ **Flash head tilting angle scale.** This scale allows you to see which angle the flash head is tilted: 45, 60, 75, or 90 degrees.
- ▶ **Flash head rotating angle scale.** This scale enables you to see where the flash head is set to when turned horizontally left or right. The scale markings include 30, 60, 90, 120, 150, and 180 degrees.
- ▶ **PC sync terminal.** This terminal allows you to trigger the SB-800 using a PC sync cord. The sync cord connects to the camera via the camera's PC sync terminal with a PC to PC sync cord. If the camera doesn't have a PC sync terminal, you can use a hot shoe adapter such as the Wein Safe-Sync or the Nikon AS-15 PC sync terminal adaptor. These adapters slide into the hot shoe of your camera.



1.16 PC sync terminal

- ▶ **LCD panel.** The LCD panel is where all of the Speedlight settings are displayed.
- ▶ **Ready light.** When this light is on the Speedlight is ready to fire. After the Speedlight fires, this light blinks until the Speedlight is fully recycled. The ready light blinks when in TTL mode and fired at full power which may indicate an under-exposure. The ready light doubles as a test fire button and can also be set to fire a modeling flash which causes the Speedlight to fire repeatedly very quickly at low power to allow a preview of how the shadows from the lighting will appear on the subject.
- ▶ **Mounting foot locking lever.** This lever locks the Speedlight into the hot shoe or the AS-21 Speedlight stand.

Control buttons

These buttons are the control center of the SB-900. The control buttons and selector dial allow you to quickly change your settings. With Nikon's additional features, there are more buttons and dials than on previous Speedlights, which allows the SB-900 to have a user interface that is a bit easier to navigate.



1.17 Back of the SB-900

- ▶ **On-Off/Wireless mode setting switch.** This is a new feature that was introduced with the SB-900. Rotating the switch one click turns the SB-900 on and readies it for operation. The other settings on the switch include Master and Remote. To switch to these settings, you must press the button in the center of the switch and rotate the switch at the same time. The lock button is used to prevent the Speedlight from being accidentally switched to the Master or Remote settings.
- ▶ **Selector dial.** This dial is used to quickly change whatever setting is selected. The selected setting is highlighted on the LCD panel.
- ▶ **OK button.** Pressing the OK button once confirms changes to the selected setting. Pressing and holding the OK button for 1 second displays the Custom Settings Menu.
- ▶ **Mode button.** Pressing the button once selects the mode for change. The flash modes can then be cycled through by rotating the selector dial. Pressing this button multiple times also cycles among the different flash modes of the SB-900 Speedlight. The different modes are
 - **TTL BL.** iTTL balanced fill flash. The exposure is determined by the camera and matched with the ambient light.
 - **TTL.** iTTL flash. The exposure is determined by the camera to sufficiently illuminate the subject that is focused on.
 - **AA.** Aperture-based automatic mode. The photographer enters the aperture value and the Speedlight determines the flash power, using data collected from the camera such as aperture, ISO, distance, and exposure compensation.
 - **A.** Non-TTL Auto Flash. This mode uses the SB-900's non-TTL sensor and determines the flash output by measuring the light reflected back from the subject.
 - **GN.** Distance-based automatic mode. The photographer enters the distance to the subject and the Speedlight determines the flash power.
 - **RPT.** Repeating flash mode. This fires a series of flashes at a rate determined by the photographer.
 - **M.** Manual flash mode. The photographer determines the flash output.



For more detailed information on flash modes and the Custom Settings Menu, see Chapter 2.

- ▶ **Zoom button.** Adjusts the zoom setting of the flash head to change coverage for different focal length lenses. Allows coverage for lenses ranging from 17mm to 200mm in FX mode and 12mm to 200mm in DX mode. 14mm coverage is achieved with the built-in wide-angle diffuser (FX) or 10mm (DX).
- ▶ **Function buttons.** These three buttons allow you to highlight different items to select them for change. The selected function differs depending on the flash mode or wireless setting.
 - **Manual.** In Manual mode, Function button 1 selects the flash output for adjustment. Function button 3 allows you to manually change the aperture setting on the flash (only when using a non-CPU lens or non-CPU lens data is not entered into the camera). Function button 2 has no function in this mode.
 - **TTL/TTL BL.** In TTL modes, Function button 1 selects the flash exposure compensation for adjustment. Function button 2 recalls display of underexposure (if any). Function button 3 allows you to manually change the aperture setting on the flash (only when using a non-CPU lens or non-CPU lens data is not entered into the camera).
 - **AA.** In Auto Aperture mode, Function button 1 selects the flash exposure compensation for adjustment. Function button 3 allows you to manually change the aperture setting on the flash (only when using a non-CPU lens or non-CPU lens data is not entered into the camera). Function button 2 has no function in this mode.
 - **GN.** In Distance (GN) Priority mode, Function button 1 selects the flash exposure compensation for adjustment. Function Button 2 selects the flash distance setting for change. Function button 3 allows you to manually change the aperture setting on the flash (only when using a non-CPU lens or non-CPU lens data is not entered into the camera).
 - **RPT.** In Repeating flash mode, pressing Function button 1 allows you to adjust the flash output. Function button 2 selects the number of times for the flash to fire. Function button 3 allows you to change the frequency of the repeating flash.



For more information on Repeating flash, see Chapter 3.

- **Master.** When the SB-900 is set to function as a Master flash, Function button 1 is used to select the Group so you can change the flash mode for the individual group. Function button 2 is used to select the channel that the SB-900 is communicating on. Function button 3 does nothing in this mode.
- **Remote.** When the SB-900 is set to function as a wireless remote, Function button 1 is used to assign a Group to the Speedlight. Function button 2 is used to assign the channel number. Function button 3 does nothing in this mode.
- **Function button 1 + Function button 2.** Pressing and holding these buttons simultaneously for 2 seconds locks the Speedlight to prevent accidental changes to the settings.

Camera compatibility

Some camera bodies only allow certain features to be used with CLS. Table 1.1 shows which functions are supported by each different camera.

Table 1.1 Nikon CLS Camera Compatibility

Camera Model or Series	CLS Feature	Details
D40, D40X, D50, D60, D3000, D5000	iTTL flash	Available with the built-in Speedlight, SB-900, SB-800, SB-600, and SB-400
	iTTL balanced fill flash	Available with the built-in Speedlight, SB-900, SB-800, SB-600, and SB-400
	Auto aperture	Available only with the SB-900 and SB-800 and an auto focus lens
	Non-TTL Auto	Available with the SB-900 and SB-800
	Distance priority manual	Available with the SB-900 and SB-800
	Wide Area AF-assist illuminator	Available with the SB-900, SB-800, SU-800, and SB-600

Camera Model or Series	CLS Feature	Details
D70/D70s, D80, D90	iTTL flash	Available with the built-in Speedlight, SB-900, SB-800, SB-600, and SB-400
	iTTL balanced fill flash	Available with the built-in Speedlight, SB-900, SB-800, SB-600, and SB-400
	Auto aperture	Available only with the SB-900 and SB-800 and an auto focus lens
	Non-TTL Auto	Available with the SB-900 and SB-800
	Distance-priority manual	Available with the SB-900 and SB-800
	Built-in flash acts a wire-less remote commander	
	Flash Value (FV) lock	
	Wide Area AF-assist illuminator	Available with the SB-900 SB-800, SU-800, and SB-600
D200, D300/D300s, D700	iTTL flash	Available with the built-in Speedlight, SB-900, SB-800, and SB-600
	Auto aperture	Available only with the SB-900 and SB-800 and a CPU lens
	iTTL balanced fill flash	Available with the built-in Speedlight, SB-900, SB-800, SB-600, and SB-400
	Non-TTL Auto	Available with the SB-900 and SB-800
	Distance priority manual	Available with the SB-900 and SB-800
	Built-in flash acts a wire-less remote commander	
	Flash Value (FV) lock	
	Auto FP high-speed sync	Available with the SB-900, SB-800, and SB-600
	Wide Area AF-assist illuminator	Available with the SB-900, SB-800, SU-800, and SB-600

continued

Table 1.1 Nikon CLS Camera Compatibility (*continued*)

Camera Model or Series	CLS Feature	Details
D2X/D2Xs, D2H/D2Hs, D3/D3X	iTTL flash	Available with the built-in Speedlight, SB-900, SB-800, SB-600, and SB-400
	Auto aperture	Available with the SB-900, and SB-800
	iTTL balanced fill flash	Available with the SB-900, SB-800, SB-600, and SB-400
	Non-TTL Auto	Available with the SB-900, SB-800
	Distance priority manual	Available with the SB-900, SB-800
	Flash Value (FV) lock	Available with the SB-900, SB-800, and SB-600
	Auto FP high-speed sync	Available with the SB-900, SB-800, and SB-600
	Wide Area AF-assist illuminator	Available with the SB-900, SB-800, SU-800, and SB-600

Even though each camera doesn't offer full functionality of the CLS features that each Speedlight offers, there are some caveats, as the next sections explain.

D40, D40X, D50, D60, D3000, and D5000

With these cameras, just because you can't use the built-in flash as a remote commander doesn't mean you can't use advanced wireless lighting. The SB-900, SB-800, or the SU-800 can be used as the commander for wireless remote Speedlights.

D70/D70s

Although the D70/D70s does allow you to use the built-in flash as a commander, it is somewhat limited. When used as a commander, the built-in Speedlight does not produce enough light to add to the exposure (this can be good or bad). It allows you to use as many remote Speedlights as you need, but all of the remote units can be used as only one group. Therefore, any exposure compensations you want to make has an effect on all of the Speedlights in the group.

Considering the price of the D70/D70s, this is still an amazing and useful feature. Being able to command even one off-camera Speedlight without the purchase of any additional accessories (other than camera and flash) is a great deal.

There are ways to lessen the exposure of one Speedlight in a group, such as moving it further away from the subject. The other drawback to using the D70/D70s built-in Speedlight as a commander is that it only allows you the option of using one channel.

When using the Advanced Wireless Flash different channels can be used to transmit the information to the remote Speedlights. Therefore, in a competitive shooting environment, if someone near you is using the D70 to fire an off-camera flash, their flash will set off yours and vice versa. As with the D50, when used in conjunction with an SB-800 or SU-800 the full range of advanced wireless lighting options are available, including access to multiple channels.

While the D70/D70s do support FV lock, to gain this control you need to access the camera's Custom Settings Menu. In the CSM you can select the AF/AE lock button to act as the FV lock when a Speedlight is attached.

D80, D90, D200, D300/D300s, and D700

With these cameras, built-in flash can be used as a wireless remote commander. This group of camera's built-in flash is a lot more flexible than that of the D70. You can use any number of Speedlights in two groups on four channels. These cameras also allow you the option of turning off the built-in flash so as not to add to the exposure when acting as a commander.

To achieve the FV lock feature, the Function button must be set in the camera's Custom Settings Menu.

This group of cameras offers the full range of CLS features when used with the SB-900 or SB-800 and a CPU lens, with the added benefit of a built-in wireless commander — something that the D2 and D3 series, which are much more expensive, does not provide.

D2X/D2Xs, D2H/D2Hs, D3/D3X

With any of the pro-level D2 or D3 series cameras you have the full functionality of any of the Speedlights. Because the cameras at this level do not feature a built-in flash however, you will need an SB-900, SB-800, or SB-600 to take advantage of Advanced Wireless Lighting.

Included Accessories

Each Speedlight comes with some accessories. And while some come with more than others, they all have a few small extras in the box. These accessories range from small stands to place your Speedlight off-camera to soft cases in which to store your Speedlights when transporting them.

The SB-400 and SU-800 only include a soft case with them. For that reason they aren't mentioned any further in this section.

SB-900

Included in the box along with the SB-900 are some handy accessories. The SB-900 is currently (as of this writing) the newest, top-of-the-line Nikon Speedlight, it has some accessories that weren't included with any Speedlight previously, even the venerable SB-800, which the SB-900 has effectively replaced.

SS-900 soft case

This is a simple padded nylon soft case that is used to provide a bit of protection to your Speedlight when you're transporting it. It has a couple of small pouches as well, one to hold your filters and the other for the stand. On the bottom of the case is a zippered compartment for holding the diffuser and filter holder. There is also a loop on the back for attaching it to your belt or your camera bag.

AS-21 Speedlight stand

This is a small plastic stand that has an accessory shoe slot. When you attach the Speedlight to the stand, you can then place your Speedlight on any flat surface. This stand also has a standard 1/4 20 threaded socket (same as the tripod socket on your camera body) for attaching to light stands or even a tripod mount.

I'm a bit disappointed in the design of this stand, largely because of the plastic threaded socket. With moderate use my socket has become stripped rendering the stand useless for attaching the Speedlight to my light stands. The AS-19 stand that is supplied with the SB-800 and SB-600 has a threaded metal insert that is infinitely more durable. Unfortunately, due to the larger foot of the SB-900 the AS-19 stand cannot be used with the SB-900.

SJ-900 color filter set

This is a set of color filters used for balancing the light from the flash with ambient light from incandescent or fluorescent light sources. This filter set comes with four filters: TN-1 and TN-2 for standard incandescent (tungsten) light bulbs, and FL-1 and FL-2 for non-color-balanced fluorescent lamps. This filter set is not to be confused with the SJ-3 Color Filter Set, which also includes color filters for special effects. The SJ-3 filter set is available separately.

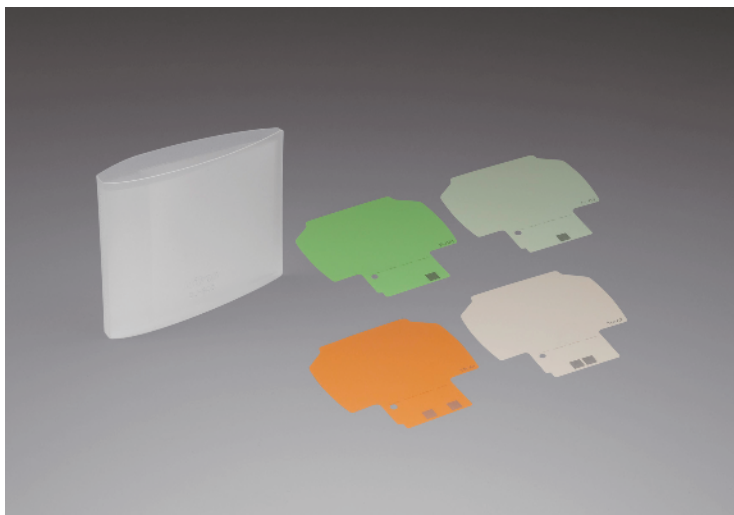


Image courtesy of Nikon, Inc.

1.18 The SJ-900 filter pack

SZ-2 color filter holder

This handy piece of clear plastic allows you to fit a filter from one of the previously mentioned filter kits in it. It then snaps over top of the flash head. This allows the filter to not be in direct contact with the flash lens, which generates quite a bit of heat that can melt and discolor the filter. This is a much-appreciated accessory that makes using filters with the SB-900 a better experience.



For more information on color filters, see Chapter 5.

SW-13H diffusion dome

This accessory snaps over top of the flash head and diffuses the light from the Speedlight to help you avoid the harsh lighting that the direct light from a flash can have. The diffusion dome also fits right over the top of the SZ-2 filter holder so that you can also use it when using color filters.



For more information on using diffusers, see Chapter 3.



Image courtesy of Nikon, Inc.

1.19 The SB-900 with the SW-13H diffusion dome

a little extra juice that allows it to recycle to full power a little quicker. This comes in handy in situations such as at a wedding where you need the flash for your main light and you don't want to miss any shots waiting for your flash to recycle. You attach this accessory to the SB-800 by replacing the removable battery compartment cover with the SD-800.

AS-19 Speedlight stand

This is similar to the AS-21 Speedlight stand that comes with the SB-900. This stand has three accessory shoe slots. You attach the Speedlight to the stand and you can then place your Speedlight on any flat surface. This stand also has a standard 1/4 20 threaded socket (same as the tripod socket on your camera body) for attaching to light stands or a tripod quick-release plate.



This stand is compatible only with the SB-800 and SB-600 Speedlights. The SB-900 hot shoe is too large and doesn't fit in the slots.

SJ-800 colored filter set

Similar to the SJ-900, but with filters made to work with the SB-800 (or SB-600), this is a set of color filters used for balancing the light from the flash with ambient light from incandescent or fluorescent light sources. This filter set comes with different

SB-800

While the SB-800 doesn't have quite as many accessories as the SB-900, it does have a few and even has one accessory that no other Speedlight has.

SS-800 soft case

This is a padded nylon soft case with a Velcro closure and a loop for attaching it to things just like the one that comes with the SB-900. It has a small pouch on the inside for storing the stand and filters.

SD-800 quick-recycling battery pack

This is a small battery pack that fits one AA battery. This gives your SB-800

color filters: TN-1 for standard incandescent (tungsten) light bulbs and FL-1 for non-color-balanced fluorescent lamps. This filter set is not to be confused with the SJ-1 Color Filter Set that also includes color filters for special effects. The SJ-1 filter set is available separately.

SW-10H diffusion dome

This is a standard diffusion dome that snaps over top of the flash head and diffuses the light from the Speedlight to help you avoid the harsh lighting that the direct light from a flash can have. The diffusion dome can also be placed over the top of the flash head while the color filters are in place.

SB-600

The SB-600 only comes with the barest accessories: a case and a stand.

SS-600 soft case

This is a padded nylon soft case with a Velcro closure and a loop for attaching it to things just like the one that comes with the SB-800 except a bit smaller. It has a small pouch on the inside for storing the stand and filters if you buy the kit.

AS-19 Speedlight stand

This is the same Speedlight stand that comes with the SB-800. This stand has three accessory shoe slots. You attach the Speedlight to the stand and you can then place your Speedlight on any flat surface. This stand also has a standard 1/4 20 threaded socket (same as the tripod socket on your camera body) for attaching to light stands or a tripod quick-release plate.

Add-on Accessories

There are a few accessories that you can purchase that can play an integral part in your CLS setup, or you can just use them as add-ons. Some of these accessories can be used in conjunction with others and some of them replace another function on another Speedlight.

SU-800 wireless Speedlight Commander

A commander (also known as a master) is what tells the remote Speedlights when to fire. It also reads the data provided by the remote Speedlight's preflashes and relays the information to the camera body for use in setting the exposure levels.

The SU-800 is an infrared wireless commander for the Nikon Creative Lighting System. It functions in much the same way as the SB-800 and SB-900 do in Master mode except that it doesn't emit any visible light. Like the SB-900 and SB-800, the SU-800 Commander has four independent channels, so if you are working near other photographers, you can work on different channels so someone else's SU-800 Commander doesn't set off your flashes.

It slides into the hot shoe of your camera like any other Speedlight and is used to wirelessly control any number of SB-900, SB-800, SB-600, or SB-R200 Speedlights. With the SU-800 you can control up to three groups of flashes. From the SU-800 you can control the output of each group individually. You can set each group to TTL, A, or M in order to fine-tune the lighting to suit your needs. In addition, not all groups need to be set to the same metering mode. For example, you can set Groups A and C to TTL and Group B to M or any combination that you choose.

You can also use the SU-800 solely as an AF-Assist Illuminator by setting all Groups to the "—" setting, which tells it not to fire remote Speedlights. This is beneficial in low-light situations when you're not using a Speedlight and you're using a D3 or D2 series camera that doesn't have a built-in AF-Assist Illuminator, or if you'd rather have the less obtrusive red LED pattern of the SU-800 as opposed to the bright white LED of the AF-Assist of Nikon's other cameras.



Image courtesy of Nikon, Inc.

1.20 The SU-800 Speedlight Commander



For information on setting up the SU-800, see Chapter 2.

R1/R1C1 and SB-R200

The R1 and R1C1 kits are the Creative Lighting System answer for close-up and macro photography. For all intents and purposes, both of these kits are the same except the R1 kit doesn't come with an SU-800 Commander and the R1C1 kit does. With the R1 kit, you need an SU-800, SB-900, SB-800, or camera with a built-in flash that can be used as a Commander, such as the D200 or the D90.

The kits revolve around the SB-R200 Speedlight. Each kit comes with two SB-R200 Speedlights, an SX-1 attachment ring clips onto the front of your lens via adapter ring that fits the SX-1 filter threads to the same size as your specific lens filter threads. The SB-R200 is then attached to the SX-1 and can be positioned in a number of ways so that you can shape the light on your subject. The SB-R200 Speedlights also come with an AS-20 Speedlight stand so you can use the flashes separately without mounting them to the SX-1 ring.

The SX-1 ring fits up to four SB-R200 Speedlights when attached to the camera or can be used off-camera with a total of eight SB-R200s attached.



Image courtesy of Nikon, Inc.

1.21 The R1C1 as mounted on the D200

SG-3IR

The SG-3IR is a simple and inexpensive little accessory, yet it comes in very handy. The SG-3IR is a small plastic device that fits into the camera's hot shoe and suspends an infrared filter that goes in front of the built-in flash to block the output of the flash when used as a commander for close-up photography with the R1 kit or even when photographing objects close up with an SB-900, SB-800, or SB-600 Speedlight.

When the built-in flash is used as a commander, the pre-flash (or more accurately the triggering flash) can sometimes add to the exposure. This is usually only noticeable when photographing your subject up close.



Image courtesy of Nikon, Inc.

1.22 The SG-3IR