

Canon

# Flash Work

Expanding the world of photography with full-time flash.

EOS/EOS DIGITAL X SPEEDLITE

# Full-time flash photography — true harmony between light sources opens up new photo opportunities.



Speedlite 580EX

EF 24mm f/1.4L USM, 1/1000, f/4

Old brick buildings, cobblestone streets, countless churches with clanging bells — charming Cremona in the northern Italian province of Lombardia is a town brimming with medieval relics. While small enough for ambling sightseers to explore in a single day, Cremona is world-renowned as the birthplace of Stradivarius and other master violinmakers. Even now, it is home to nearly 100 stringed instrument makers' ateliers.

“Each instrument is unique even if crafted by the same artisan,” a proud local resident assures me. With my Speedlite and EOS DIGITAL camera in hand, I capture him and his viola with Cremona in the background all in one beautiful shot.

Light sources are not always bright enough, or where you want them to be. They may cast shadows on subjects, for example, that complicate the shooting situation. The ideal solution would be an easily controllable light source that achieves natural exposure without leaving telltale signs of its use.



Canon Speedlite flash units make this ideal a reality. Once mounted on an EOS series camera, they allow photographers to simply press the shutter button to obtain photos with an ideal balance between the background and subject. Even in daytime shots, they can help ensure that subjects are captured vividly in a wide range of environments.

Thanks to Canon Speedlites, flash units are no longer just for taking photographs in the dark. These sophisticated devices have ushered in a new world of full-time flash photography!

# Professional lighting control is no longer reserved for professionals.



Speedlite 580EX

EF 35mm f/1.4L USM, 1/200, f/5.6

## An atelier's good-luck charm

I photographed this angel in an atelier at Cremona's Piazza S. Antonio M. Zaccaria. Its timeworn surfaces and exquisite handiwork suggested antiquated origins and immediately caught my eye. The atelier's proprietor looked pleased and took a break from crafting a cello, declaring "This is our good-luck charm. A member of my family found it at a Christmas antique market."

Outside, the setting autumn sun shone brightly on the brickwork of a church and piazza. With the help of my Speedlite, I captured their radiant surfaces in a delicate balance with the fine details of the angel.

— Piazza S. Antonio M. Zaccaria, 4:00 pm



Evaluative metering (no flash)

## Automatic functions replace sophisticated lighting techniques.

Your range of photographic expression expands exponentially when using an external flash unit as the main or auxiliary light source. For example, subjects can easily be captured against reflective backgrounds at the ideal exposure. Or you can highlight subject details without adjusting exposure to compensate for the background.

Fully automatic functions available in EX Series Speedlite flash units provide all the benefits of professional exposure and light control techniques. When mounted on an EOS camera, a Speedlite automatically receives information such as the lens focal length, exposure control mode and aperture. It then makes adjustments accordingly, working together with the camera as an integrated unit to achieve the most natural possible exposure. When photographers use a Speedlite, they reap the rewards of sophisticated flash photography with the press of a shutter button.



## E-TTL II strikes a natural balance between the subject and background.

E-TTL II is Canon's latest proprietary automatic flash exposure control system. By employing multiple metering zones to measure both ambient light and preflash, then comparing the two and taking metering distances into account, this sophisticated system automatically adjusts the flash level to achieve natural reproduction with ideal exposure of both the background and subject.

In various shooting situations, even when the background is highly reflective, E-TTL II can use distance information from the lens to eliminate underexposure and achieve optimal automatic flash exposure control.

### E-TTL II autoflash system operation flow

1. Shutter button pressed halfway.  
Autofocusing and evaluative metering (with the multi-zone sensor linked to the focusing point) are executed simultaneously. The ambient light is thereby metered.
2. Shutter button pressed completely.  
A preflash is fired, and the reflected light is metered by the multi-zone evaluative metering sensor.
3. The meter readings of the ambient light and preflash are compared and the ideal main flash output is calculated and stored in memory.
4. The reflex mirror goes up, the first shutter curtain starts to open, the main flash fires, the imaging sensor is exposed, the second shutter curtain closes, and the reflex mirror goes back down.
5. The flash exposure confirmation lamp illuminates.

### Sample photo analysis

In my first attempt at capturing the angel, I utilized a spot metering function to determine the correct exposure. The resulting image was brightly lit, but lacked the vivid detail I was striving to attain. Moreover, I failed to capture the atmosphere of the old town in the background, which was overexposed.

On my next attempt, I took advantage of the automatic flash exposure control of E-TTL II. This intelligent feature eliminated the dramatic exposure gap and captured both the angel and piazza with a clarity that matched my aspirations.



Spot metering (no flash)

## Colour temperature compensation ensures faithful colour reproduction.\*

When an EX Series Speedlite is mounted on an EOS DIGITAL camera, it automatically informs the camera of the colour temperature of its illumination. This enables the camera to calculate white balance with extreme accuracy.

\* White balance must be set to "automatic" or "flash use" mode. Please refer to pages 29-30 for a list of models that support this function.

## Light distribution and zooming control are optimized depending on the camera's image sensor size.\*

The angle of view of an EOS DIGITAL camera is different depending on the size of its image sensor (APS-C, APS-H, or 35mm full-size), regardless of the focal length of the lens being used. This factor is taken into account by EX Series Speedlites, which automatically adjust the flash zoom mechanism depending on your camera's image sensor size to deliver an ideal flash angle for the effective angle of view. Since only necessary areas of the scene are illuminated, Speedlites are especially efficient at conserving energy.

\* Please refer to pages 29-30 for a list of models that support this function.

# Some facial expressions demand a full aperture setting even when backlit by the sun.



High-speed sync

EF 135mm 1/2L USM, 1/750, f/2

## A virtuoso in the making

The Caporali family has tilled this soil for many generations, and their large garden affords the perfect refuge for a daughter practicing the violin. Her beautiful eyes stand out against the glaring sun, vividly expressing both innocence and confidence. With the aperture fully open in high-speed sync flash mode, I capture the fleeting moment for posterity.

— Castelvetro Piacentino, 1:00 pm



Daytime sync

## High-speed sync flash achieves beautiful blurring even when shooting against the sun.

When subjects are backlit by the sun, strong shadows tend to mask facial features and other details. Photographers can eliminate such shadows by readjusting the exposure, but this form of compensation is likely to overexpose the background. Another possibility is daylight fill-flash. This technique is often effective when shooting outdoor portraits because it illuminates dark areas of the subject and strikes an excellent balance between the brightness of the subject and background. However, its range of uses is limited because the shutter speed cannot be set faster than the X-sync speed of the flash and the aperture must be reduced to compensate for higher brightness.

EX Series Speedlites offer the perfect solution. When used in combination with the high-speed sync flash mode, EX Series Speedlites can synchronize with a shutter speed that is faster than the camera's flash X-sync speed. This availability of faster shutter speeds allows the aperture to be set more freely. And when a large-diameter EF lens is additionally used, the aperture can be fully opened to achieve beautiful blur effects.

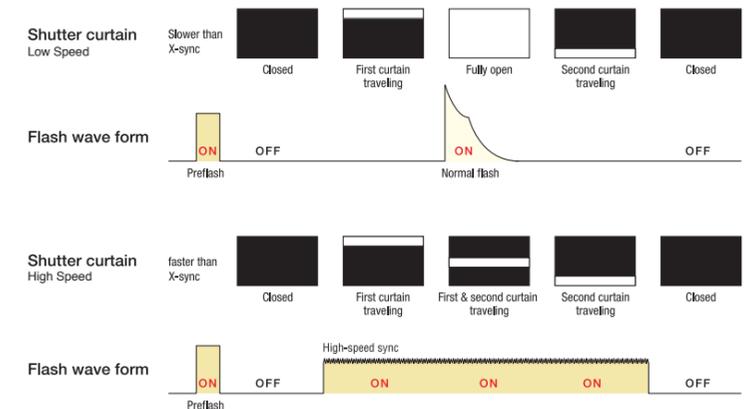
### Sample photo analysis

The main photo was taken in the high-speed sync flash mode with a fully open aperture, while the other photo was taken in the normal daylight fill-flash mode, which required a slower shutter speed and smaller aperture. In both shots, the creative objective was to highlight the girl's facial expression by blurring the house and background objects as much as possible. As you can see, the level of blur is much more impressive in the main photo.

## Flash synchronization at all shutter speeds enables larger aperture settings.

When fast shutter speeds are selected, the second shutter curtain begins closing before the first curtain fully opens. The illumination therefore only hits part of the film at normal flash settings. But the high-speed sync flash setting fires repeatedly at roughly 50kHz intervals during the exposure to achieve flash synchronization at all shutter speeds. The camera automatically reverts to normal flash firing when the shutter speed is set slower than the flash X-sync speed.

### High-speed sync



### A tip on high-speed flash synchronization

#### - Use Aperture Priority AE (automatic exposure) mode

When shooting in the Full Automatic or Program AE (P) mode with a mounted Speedlite, an EOS camera automatically sets the shutter speed and aperture for typical daylight fill-flash photography. Switching to the Aperture Priority AE (Av) mode allows shooting with the aperture fully open.

# Multiple flash photography can bring out every detail.



Multiple flash (3 units)

EF 35mm f/1.4L USM, 1/60, f/2.8

## Passing on the legacy

Francesco Bisolotti is known as a modern-day Stradivarius. His eldest son and apprentice, Marco, is widely regarded as the inheritor and caretaker of Cremona's violin crafting tradition. I had the pleasure of meeting them both at the Bisolotti family office, where a statue of Stradivarius is a central fixture. They posed with the statue, as was fitting for the two violinmakers whose skills most closely resemble those of the legendary master. Using three flash units, I clearly captured them and the impressively decorated office in one memorable photo.

– Piazza san Paolo, 2:00 pm



Direct lighting (single flash unit)

## Wireless multiple flash units illuminate the subject and background.

In rooms lacking ambient light, the use of a single flash unit that directly lights the subject may result in a brightly lit subject and extremely dark background. To effectively illuminate both the subject and background with the desired amount of light, from the desired directions, a photographer may choose to employ multiple flash units.

The use of multiple flash units can complicate the setting of exposure. But with EX Series Speedlites, photographers simply press the shutter button as with single-flash photography since the flash units automatically set their own exposure. For even more convenience, slave Speedlite 580EX and 430EX flash units can be wirelessly controlled from a Speedlite 580EX or Speedlite Transmitter ST-E2 mounted on an EOS camera.

In multiple-flash photography, the master flash unit is generally set up before the slave units. Achieving the right balance of exposure settings usually requires a combination of experience and guesswork. But EOS and EOS DIGITAL cameras combined with EX Series Speedlites greatly simplify the process and heighten the enjoyment. Furthermore, results can be checked on the LCD monitor of EOS DIGITAL cameras, allowing adjustment on the spot.

Note: Macro Ring Lite MR-14EX and Macro Twin Lite MT-24EX can also serve as master flash units.

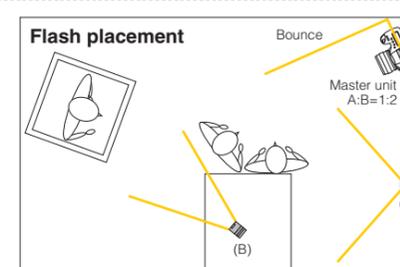
## Up to three groups of flash units can be used to realize your creative vision.

Simultaneous control of up to three groups of Speedlites (A, B and C) is possible. The photographer simply chooses a lighting ratio between the A and B groups, with ratios as high as 8:1 or as low as 1:8, and lets the units automatically adjust their own exposure level to maintain the lighting ratio. There is no cumbersome manual adjustment of exposure. The brightness of group C is then controlled independently of the other two groups, allowing effective illumination of the background or accentuation of key areas. Overall lighting is easily adjusted while monitoring the results on the camera's LCD monitor. Using the master flash unit, the photographer simply adjusts the lighting ratio between the A and B groups and the light level of the C group to attain desired lighting.

Note: The lighting ratio between the A and B groups can also be adjusted via Speedlite transmitter ST-E2.

### Sample photo analysis

Three flash units provided illumination. The light from the master flash unit (A), a Speedlite 580EX mounted on the camera, was bounced off the wall to soften its intensity before reaching the two violinmakers. A slave 580EX (B) was set far enough away on a desk to be pointed directly at the statue, and another 580EX (B) was used to light up the overall office. Based on the results displayed on the camera's LCD monitor, the brightness of the master flash unit was halved to achieve a natural result.



### Wireless multiple-flash photography tip

#### Avoid having obstacles between the camera and slave flash units.

Whether using a master flash unit or Speedlite Transmitter, your commands to slave flash units are transmitted by light pulses or infrared signals that are easily blocked by thick walls, large furniture and other dense objects. When deciding camera and flash locations, it is wise to take this factor into account.

# Light and subject merge to create an unforgettable image.

# Freedom to reframe while maintaining ideal subject lighting.



Slow-sync

EF 24-105mm f/4L IS USM, 1.5 sec., f/4

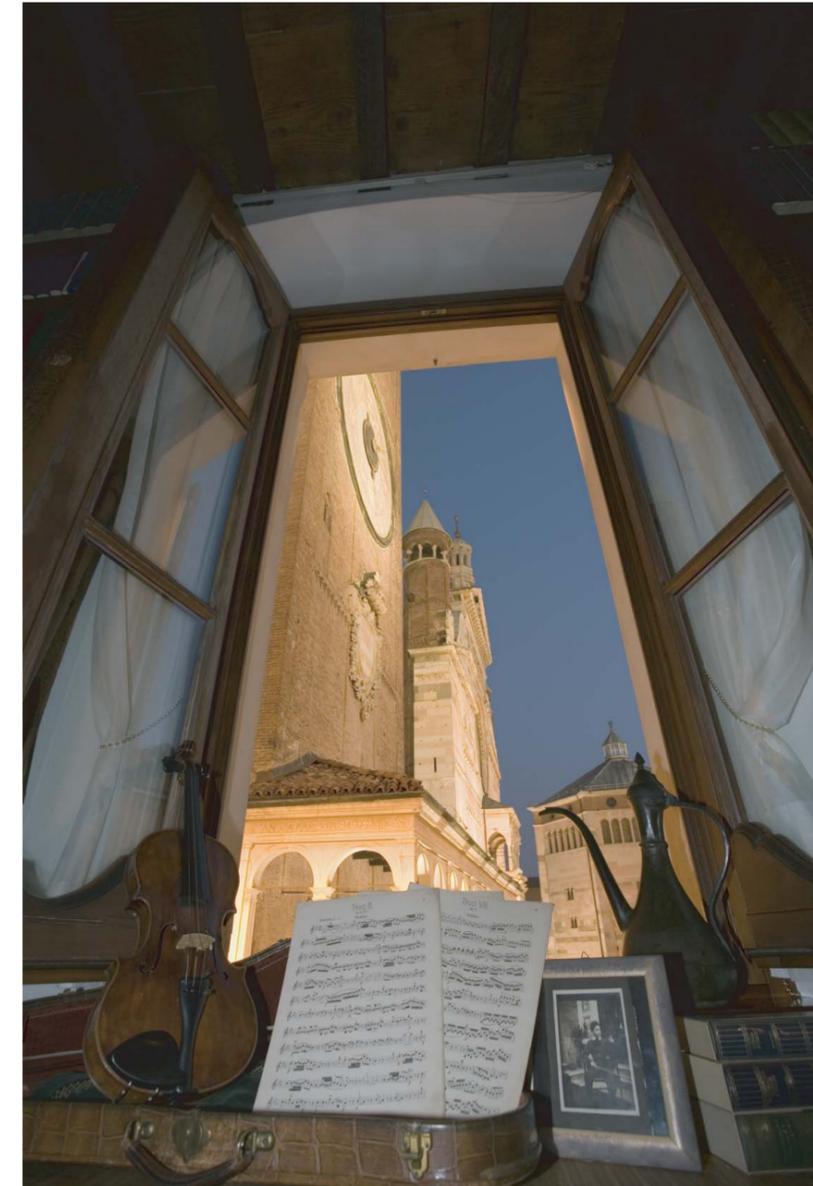
## A night at the opera

Operas are popular in the town of Cremona, where renowned opera composer Claudio Monteverdi was born. Francesco and Federica have been anticipating this evening, which marks the grand opening of the opera season. As they hurry to attend the season premiere, they are bathed in the warm glow of a Romanesque church featuring Italy's tallest bell tower. Slow-sync flash helps me capture their excitement with pleasing clarity.

– Piazza del Comune, 7:00 pm



Regular flash without slow-sync



FE Lock

EF 17-40mm f/4L USM, 6 sec., f/8

## The sheet music that father left behind

The music-loving violinist left this world half a century ago, but his sheet music lives on. "I was too small to remember my father playing the violin," says his daughter, who was 5 years old at the time. But she still likes to imagine how his playing might have sounded. The sun is setting beyond the window. With golden walls as a backdrop, and gentle violin music playing in my head, I photograph this relic that links the generations. – Via Solterino, 6:30 pm

## Slow-sync flash is ideal for night scene portraits.

When photographing people against illuminated buildings, city lights, the setting sun, or dimly lit backgrounds, there emerges a large gap between the brightness of the subject and background. In such situations, it is easy to make mistakes such as overexposing the subject or underexposing the background. But EX Series Speedlites can accurately assess the situation and bridge the brightness gap, providing natural lighting results.

### Tips on slow-sync flash

#### Primarily use Aperture Priority AE (automatic exposure) mode

In the Full Automatic and Program AE (P) shooting modes, EOS cameras prioritize securing a fast shutter speed (no slower than 1/30 sec.) to prevent camera shake. Selecting the Aperture Priority AE (Av) mode automatically activates slow-sync flash, taking the background into account to achieve appropriate automatic flash exposure control.

#### Beware of camera shake and subject blurring

When shooting with slow-sync flash, the slow shutter speed demands use of a tripod to prevent camera shake.

## Framing readjustment without worrying about the flash.

Reframing the image after locking the focus can sometimes dramatically alter the required exposure level. This problem can easily be eliminated, however, by using FE Lock to maintain the initial flash level. Similar in many ways to the AE Lock function, FE Lock uses spot (or partial) metering to determine the ideal flash level and fires the flash accordingly when the shutter button is pressed to ensure appropriate exposure of the subject even during reframing.

### Sample photo analysis

A sheet of music is the main subject of this image. With dark backgrounds, the act of reframing the subject often results in overexposure. But the combination of FE Lock and an EX Series Speedlite enabled the sheet music to be captured with the right exposure even after reframing the scene.



FE Lock

Without FE lock (overexposed)

# Subtle control of lighting in macro photography.



Macro Ring Lite MR-14EX

EF 100mm f/2.8 Macro USM, 1/60, f/16

## A colourful collection of confections.

Established in 1836, Sperlari is one of Cremona's favorite confectioners. The company is renowned both in Italy and abroad for its excellent Torrone nougat candy, an essential Christmas treat in Italy. While I was surveying unfamiliar confections with great interest in one of their shops, the short and energetic proprietor gave me a generous helping of samples. My close-up of these colourful confections is an attempt to capture the warmth and charm that characterize Cremona.

– Via Solferino, 1:00 pm



Speedlite 580EX

## Shadows can be eliminated from close-up subjects.

The most basic way to evenly illuminate a subject is to fire a camera-mounted flash unit directly at the subject. With close-ups, however, a regular flash unit would illuminate the subject from an acute angle and shadow the bottom of the image. Macro Ring Lite MR-14EX is an ideal solution for eliminating these annoying shadows. Mounted on the lens rim, its circular flash tubes evenly illuminate the entire frame from all directions, enabling high-quality, shadow-free close-ups of flowers, insects, jewelry, candies and more with ease.



## Partial flash firing adds depth to close-ups.

Photographers can deliberately create shadows and emphasize dimensionality in close-ups by firing just one of Macro Ring Lite's two flash tubes. Modeling flash may also be fired beforehand to determine how the shadows will appear. Like all EX Series Speedlites, the MR-14EX supports high-speed sync flash and FE Lock. It can also serve as a master flash unit, allowing wireless control of multiple slaves.



MR-14EX (two flash tubes)



MR-14EX (one flash tube)



Macro Twin Lite MT-24EX

EF 50mm f/2.5 Compact Macro, 1/60, f/4

## Proof of superb craftsmanship

According to an old saying, the expertise of a violin craftsman can be judged by the quality of his violin scrolls. Their elaborately sculpted shapes clearly reflect the technique and sensitivity of the maker. Not surprisingly, the violin scrolls crafted by popular Edgar Russ are exquisite works of art. The finely honed contours of a scroll are beautifully captured here with the subtle assistance of Macro Twin Lite.

– Via M.Marci, 1:00 pm

## The flexibility to meet creative demands.

Macro Twin Lite MT-24EX is specifically designed for macro photography. Equipped with two independent, angle-adjustable flash heads, it enables more flexible control of lighting than the MR-14EX. Each of the two flash heads can be fired independently if desired and provides bright illumination with a maximum guide number of 26/83.5 (ISO 100 in m/ft). The MT-24EX supports wireless multiple flash functions, as well as high-speed sync flash and FE Lock.



MR-14EX 1:0 (Left flash tube)



MR-14EX 1:1 (Both flash tubes)



MR-14EX 0:1 (Right flash tube)

## Lighting ratio control for subtle shading adjustment.

The lighting ratio between the two flash tubes/heads on each macro flash unit (MR-14EX or MT-24EX) can be adjusted between 8:1 and 1:8 in 13 half steps. This function is useful for creating more natural shading and a greater sense of depth. The two flash tubes/heads can also be independently rotated around the lens rim to adjust the location of highlights and shadows, thus better matching the shooting situation and creative intentions of the photographer.

# Speedlites help you realize your creative vision.



No flash exposure compensation

Flash exposure compensation (-1), Camera exposure compensation (-1) EF 24mm f/1.4L USM, 1/4, f/5.6

## Relaxing before the performance.

The former residence of a noble family now serves as a multi-purpose facility for rent. Today the facilities are reserved for a party featuring the music of a string ensemble. I discovered two of the musicians relaxing in the waiting room before their performance, and they were kind enough to pose for this photograph.

– Palazzo Cattaneo Ala Ponzone, 10:00 am

## Flash exposure compensation enables subtle flash level adjustment.

When areas of a scene sharply differ in brightness, manual flash level adjustment can be fine-tuned to a setting that naturally blends the extremes. The flash level is adjustable between -3 and +3 in 1/3 or 1/2 steps, depending on the camera.

### Sample photo analysis

This challenging scene captures musicians conversing between a dimly lit room and bright outdoor environment. Since the automatic flash setting was ideal for the room but overexposed the yard, I lowered both the flash level and exposure by 1 step to capture the outdoor area more clearly. The transition between indoors and outdoors is much more natural as a result.



FEB (standard) EF 50mm f/1.4 USM, 1/60, f/4 Compensation: -1 Compensation: +1

## An advertisement on wheels

“After seeing a scooter with a musical instrument painted on its body,” the multi-talented violinmaker explains, “I decided to paint one of my own musical instruments on my scooter. It’s a good advertisement!” This photo of the scooter was taken at dusk with the Po River in the background.

– Via Lungo del Po Europe, 6:00 pm

## Flash exposure bracketing with ideal exposure.

With a single press of the shutter button, the FEB (Flash Exposure Bracketing) function on EOS DIGITAL cameras automatically takes three photos with different flash levels — normal, below normal and above normal. Depending on the camera, these levels are adjustable in 1/3 or 1/2 steps in a range between -3 and +3. The exposure setting remains constant, regardless of flash level, to ensure consistently excellent results.



Auto flash reduction EF 50mm f/1.4 USM, 1/4000, f/1.4

## A place to read and relax.

The streets and piazzas of picturesque Cremona are teeming with cafes and corners where people can relax. I captured Eleonora reading sheet music on her favorite corner. Her fresh white blouse stood out against the stone pavement that was brightly reflecting the sun.

– Piazza d. Pace, 2:00 pm

## Auto flash reduction in bright environments.

When shooting in bright settings, or using daytime synchronization flash to shoot extremely bright subjects, automatic flash reduction prevents overexposed “blowout” by automatically reducing the flash level. This function, available when using EX Series Speedlites on EOS cameras, essentially determines whether the flash should be used as the main or auxiliary light source.



Manual flash (1/128) EF 85mm f/1.2L USM, 1/60, f/2.5

## Learning on the job.

Maria’s part-time job serves as training for the career she’ll soon begin after graduation. “I’ve been gaining an insider’s perspective on planning and management,” she says with a smile. “This has been a great learning experience.” I captured her busy at work, serving refreshments and beaming with youthful optimism.

– Palazzo Cattaneo Ala Ponzone, 11:00 am

## Fine-tuning of details via manual flash.

Speedlites provide a manual flash mode that allows adjustment of the lighting level. Precise manual adjustment is useful for highlighting details of the subject in the shade or adding catchlight in the eyes.

\* Not supported by Speedlite 220EX.



No flash

### Sample photo analysis

In the first shot, the subject and tree are clearly captured without using a flash. By employing a Speedlite at a reduced flash level, I was able to enliven her facial expression with catchlight in her eyes. The flash also improved the photo by bringing out the leaves.

## Capturing motion with the aid of a flash.



2nd curtain sync flash

EF 24-105mm f/4L IS USM, 2 sec., f/4



1st curtain sync flash

### An oldie but goody.

This lovingly cared-for scooter doesn't run like a relic of the 1960s. "I restored it myself and it runs extremely well," boasts the proud scooter owner. Late at night, I capture him and his ride in a streak of light at a slow shutter speed.

– Parco del Po, 7:00 pm

### Second curtain sync flash for natural light streaks.

Flash units normally fire when the first shutter curtain is fully open. Since the time lag between pressing the shutter button and firing the flash is extremely short, this method is ideal for seizing fleeting shutter opportunities. However, any movements of light sources after the flash fires and before the exposure ends are also recorded in the image. This can

be a problem at slow shutter speeds.

With EX Series Speedlites, photographers have the option of firing the flash right before the second shutter curtain begins moving. This second curtain sync flash function captures moving light sources before the main subject, resulting in images that convey a more natural sense of movement.

## EX Series Speedlites Lighting techniques

### Basic examples



Stroboscopic flash

EF 24-105mm f/4L IS USM, 4 sec., f/4

### Special stroboscopic effects.

The stroboscopic flash function fires the flash repeatedly during exposure to record multiple moments in a single photo. Users can manually set the flash interval (firing frequency) as desired to capture more or less of the subject's motion. The number of exposures depends on the firing interval and shutter speed.

### Dancing in the dark.

20-year-old Ottavia has a winning smile. "It's fun to play and dance," she exclaims with glee. Her swift motion and light steps blend pleasingly in a single frame.

– Via Lungo del Po Europe, 7:30 pm

# Bounce flash for soft lighting that feels warm and natural.

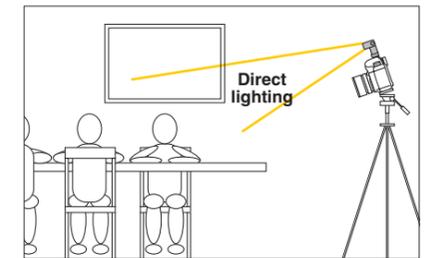
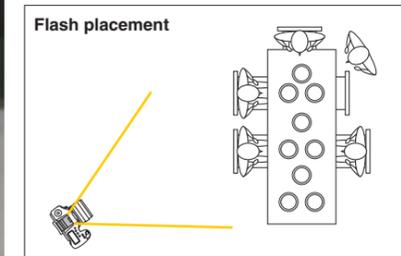
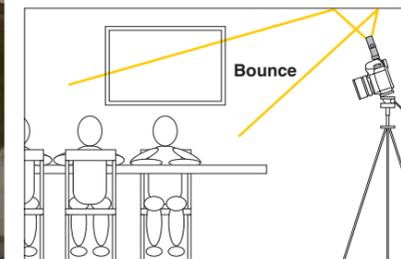


Bounce lighting (indirect lighting)

EF 50mm f/1.4 USM, 1/15, f/4



Direct lighting



## Happy birthday!

Today is a special day for violinmaker Borchardt and his family. In celebration of his second son's birthday, they are dining at Osteria Del Melgrano restaurant, a favorite among Cremona locals. "Music, family and great food. What more can you ask for?" asks Borchardt with warmth emanating from his eyes. The proprietor arrives with a big birthday cake and 12 burning candles. Everyone joins him in shouting "Happy birthday!" I capture the happy family with the warm lighting of a bounce flash.

– Via Aporti, 6:00 pm

### A bounce flash enables natural lighting with soft light reflections.

Direct firing of flash units at subjects in a room tends to cast unnatural shadows on the walls. Such shadows can be prevented by using a diffuser or first bouncing the flash off a ceiling or wall. This versatile bounce flash technique is effective in various shooting environments, especially when soft lighting is required to naturally capture the subject's facial expression. The colour of the wall or ceiling, and its distance from the flash unit, affects the intensity of the illumination reaching the subject. But the desired light level is easily achieved with an EX Series Speedlite by using automatic flash exposure to fire a preflash and then adjusting the light level.

### Sample photo analysis

The main photograph was taken by bouncing the flash diagonally off a white ceiling above the family's heads. This spread the illumination over the entire scene and achieved an excellent balance with the incandescent room lighting. The other photo was taken with a directly aimed flash, resulting in shadows on the wall and uneven lighting. Areas hit strongly by the flash are white, while other areas are warmly coloured by a combination of weaker flash illumination and incandescent light.

### Bounce flash tips

- **Choose a white or bright-coloured surface.**  
Bouncing the flash off a white or bright-coloured surface helps reduce the loss of light and prevent transmission of the surface colour to the subject.
- **Try different bounce directions.**  
When bouncing the flash off a ceiling, reflected light from directly above the subject may create unwanted shadows on the face. The key to preventing such shadows is to bounce the flash diagonally off the ceiling toward the subject. Bouncing the flash off the right or left wall can create a better sense of depth by adding natural shades to the subject.
- **Adjust the distance between the flash and bounce surface.**  
The further the flash unit is moved from the bounce surface, the softer the resulting flash illumination will be (as long as the flash level is not adjusted). Note that at extreme distances, the flash becomes too weak to affect the image.

# The range of possibilities is limited only by your imagination.



Multiple flash (3 units)

EF 50mm f/1.4 USM, 1/60, f/2.8

## Creative illumination

At Borhardt atelier, I found a violin that had not yet been varnished. Spotlessly white, with smooth contours crafted by gifted hands, the unfinished body was beautiful to behold. I posed it with a completed violin and another unfinished instrument to illustrate different stages of the violinmaking process. Illumination supplied by three flash units brought out the beauty of the instruments from every angle and eliminated shadows that would have detracted from their perfection.

– Piazza S. Antonio M. Zaccaria, 2:00 pm



Direct lighting (single flash unit)

## Wireless multiple flash lighting opens up new photo opportunities.

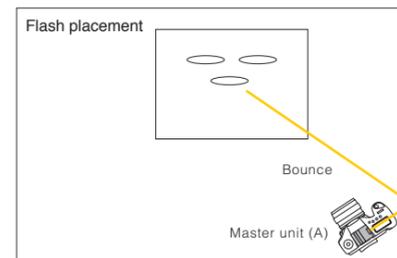
The use of multiple flash units significantly expands the range of possible photographic expression. Simply by adjusting the positions and light levels of the units, a photographer can drastically change the look of the image. For example, unwanted shadows can be eliminated, shades can be adjusted, and the atmosphere can be vividly brought to life. Multiple flash lighting greatly enhances the pleasure of photography by giving photographers a multitude of creative options for achieving their

own unique vision. Using EX Series Speedlites in combination with an EOS or EOS DIGITAL camera enables fully automatic wireless control, as well as the grouping of flash units and the setting of light level ratios between groups. EOS DIGITAL cameras also offer the additional advantage of allowing the results of multi-flash lighting to be checked immediately on the spot. Professional results are most easily achieved by setting up the main flash unit before the slave units.



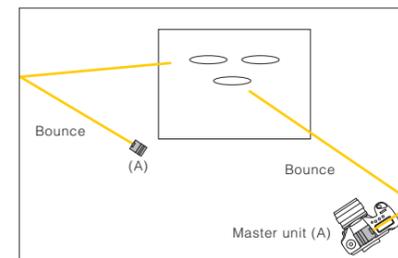
### Step 1 Set up the main flash unit

To prevent the strong shadows a direct flash would produce, the main flash was bounced off a wall near the camera to soften the lighting.



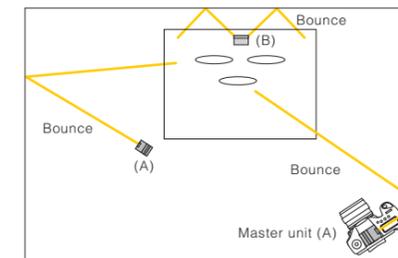
### Step 2 Add an auxiliary flash unit

Remaining shadows were weakened by bouncing an auxiliary flash off another wall to hit the subjects from a direction opposite that of the main flash unit.



### Step 3 Add another auxiliary flash unit

To improve gradation and contrast, another auxiliary flash unit was set up behind the subjects. Its light was bounced off the back wall to accent key details of the image.



## Sample photo analysis

The lower photo on page 19 was taken with a single direct flash. It appears flat and contains shadows that mask the beauty of the subjects. Unnatural reflections on the central violin also spoil the photo.

In contrast, the main photo was taken with bounced light from three flash units — a main flash unit (A), one auxiliary unit (A) for eliminating the shadows, and another (B) for bringing out the background. The multi-flash lighting adds depth and vividly highlights the distinctive curves of the violins.

## Multi flash is also effective in macro photography.

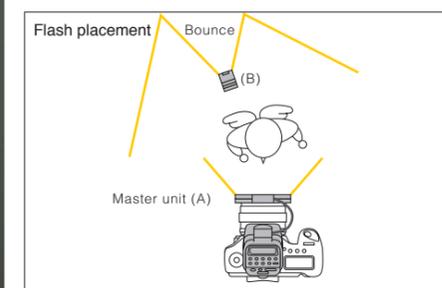


Multiple flash (Macro Ring Lite and Speedlite)

EF 100mm f/2.8 Macro USM, 1/60, f/2.8



Macro Ring Lite only



### Between god and man.

The angel perfectly matches the atmosphere of the atelier. Look closely at the face and you can see the exquisite craftsmanship. "If angels are mediators between god and man" the proprietor remarks with a smile, "then I must be like an angel because I mediate between godly music and modest wood". To bring out the angel's facial features and set them against a pleasingly blurred background, I used macro flash and a second flash aimed at the background wall.

– Piazza S. Antonio M. Zaccaria, 4:00 pm

### Additional lighting can greatly enhance the image.

Macro Ring Lite MR-14EX and Macro Twin Lite MT-24EX enable subtle, fully automatic lighting of very close subjects. With dark backgrounds, however, the resulting image may be extremely underexposed. To achieve a more pleasing composition, an auxiliary flash unit can be used to brighten the background.

#### Sample photo analysis

Macro Ring Lite MR-14EX (A) was used in the sample images above. The lack of ambient light left the background dark and dull until a Speedlite (B) was added to bounce light onto the background wall. This additional lighting gives the image more impact and provides a greater sense of depth.

## Rule No.1 — make the most of the light that is already there.

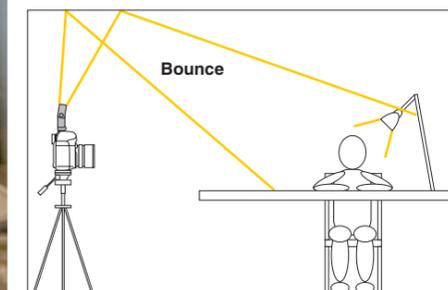


Bounce lighting (flash unit as auxiliary light source)

EF 35mm f/1.4L USM, 1/6, f/4



Direct lighting (flash unit as main light source)



### Capturing the creation of a masterpiece

“Accuracy is more important than style when creating musical instruments because we are appealing to hearts and ears, not eyes,” remarks Edgar Russ. A true master craftsman who began his apprenticeship in Cremona at the age of 18, Russ creates violins so eagerly sought after that customers must wait a minimum of two years for delivery. The essence of violinmaking has changed little over the years. To win the approval of aficionados, violinmakers must patiently carve beautiful curves from well-dried panels of wood. In the above photo, bounced flash complemented lighting from the incandescent lamp, enabling me to capture the intensity of the master craftsman at work.

– Via M.Marci, 11:00 am

### Enhancing the atmosphere with an auxiliary flash

Photographers always have the choice of using a flash unit as the main or auxiliary light source. When a constant incandescent light source is available, it is often best to use the flash as an auxiliary light source in order to maintain a natural, warm atmosphere. The auxiliary flash can simply be bounced off a wall, ceiling or diffuser to soften the light and complement the lamp. Determining the best flash exposure in such situations used to be difficult. But an EX Series Speedlite and EOS camera can automatically determine the ideal flash exposure level by metering the ambient light and preflash. This automatic ease frees photographers to concentrate on their art, rather than technicalities.

### Sample photo analysis

In the smaller photo above, a directly aimed flash unit served as the main source of light. The skin colour of the subject was faithfully reproduced, but the incandescent lamp was overexposed and casting a shadow in the background. In addition, the background was underexposed because the large workshop was not adequately illuminated by ambient light.

The main photo was achieved by bouncing the flash off the ceiling as an auxiliary light source. Using the incandescent lamp as the main source of light more naturally captured the intensity of the craftsman's expression. This is closer to how the scene appears to the naked eye.



## Ambient exposure compensation

A function for adjusting ambient exposure through aperture and shutter speed and without adjusting flash output. This function affects both foreground and background brightness and is useful for brightening the background during fill-in flash photography.

## Ambient light

All light in the shooting environment from natural and artificial sources (such as tungsten light, fluorescent light and candle light), excluding light provided by the photographer via flash units.

## Autoflash metering

The camera's light sensor meters the light reflected by the subject after the flash begins firing. The flash output is then controlled instantly so that the proper flash exposure is obtained.  
See page 4.

## Bounce flash

Light bounced off a ceiling, wall or other surface to soften the light hitting a subject. A white or light-coloured surface is best since the colour of the reflective surface affects the colour of the light. Bouncing the light also lowers its brightness in comparison to direct flash, requiring adjustments to aperture or ISO speed settings.  
See page 17.

## Catchlight

Light that reflects in a subject's eyes and adds life to the portrait. Either a flash or reflector panel is used to create catchlight.  
See page 14.

## Clip-on flash

Any flash unit that can be attached to the accessory shoe of a camera.

## Diffusing

Spreading and softening flash illumination by using a translucent material placed between the flash unit and subject or bouncing the flash off a ceiling or wall. Soft diffused light naturally lightens the shadows and makes flash photography with softer contrast possible.

## Exposure compensation

A function for adjusting ambient exposure through aperture and shutter speed. Since the flash output is automatically controlled by the aperture, no flash exposure compensation is applied. To compensate flash exposure, use the flash exposure compensation function.  
See page 13.

## FE (Flash Exposure) Lock

When the photographer locks the focus, this feature locks the flash level (determined by spot or partial metering) by firing a preflash and storing the appropriate flash output level so that the ideal exposure will be maintained for the main subject even if the scene is reframed. In flash photography, this feature is useful for obtaining the proper exposure by metering at a certain spot or subject in the frame.

## FEB (Flash Exposure Bracketing)

A feature that automatically produces three shots with different flash output (correct exposure, underexposure, overexposure). Background exposure is unchanged since the aperture and shutter speed are not adjusted.

## Flash

A flash is a short-duration, brilliant burst of light.

## Flash exposure compensation

This function only adjusts the level of illumination provided by the flash. It's particularly effective for fine-tuning the balance between foreground and background exposure during fill-in flash, but it can also be effective at compensating for highly reflective and non-reflective subjects.  
See page 13.

## Guide Number (G No.)

A number indicating the amount of light a flash emits. Its relation to the aperture and the distance between the flash head and subject is as follows:  
 $G \text{ No.} / \text{Aperture (f)} = \text{Distance for optimal exposure}$   
 $G \text{ No.} / \text{Distance} = \text{Aperture (f) for optimal exposure}$   
See page 12, 27.

## High-speed sync

In normal flash photography, the flash is synchronized to fire at the moment when the first curtain finishes traveling and before the second curtain starts traveling. High-speed sync extends the flash duration, making flash synchronization possible when using fast shutter speeds that form a slit between the first and second curtains while traveling. EOS dedicated EX Series Speedlites offer this feature, enabling automatic high-speed sync control with E-TTL II.

## Intermittent flash

Simulating a longer-lasting flash by repeatedly firing the flash unit(s) at high speed. This technology is often used for high-speed sync and modeling flash.

## Main flash

The principle flash fired after the preflash when the shot is actually taken.

## Modeling flash

A monitoring flash that can be fired before photographs are taken to help determine light placement for desired light balance, shadows, etc.

## Multiple flash (wireless and wired)

This is a flash setup with one or more Speedlites other than the one attached to the camera. In a wired system, multiple Speedlites are connected with a multi-Speedlite connector and extension cords. In a wireless or slave unit system, multiple Speedlites can fire without any wired connections. Speedlite 580EX is equipped with both transmitting and slave functions. With a Speedlite Transmitter ST-E2 or Speedlite 580EX, MR-14EX, or MT-24EX set as the master unit, multiple Speedlite 580EXs or 430EXs (set as slave units) can be wirelessly controlled for E-TTL II autoflash.  
See pages 7, 19, 21.

## Normal flash

A normal flash is a short-duration flash of 1/200 sec. or less that illuminates the subject but leaves the background underexposed. See "ambient light" for comparison.

## Preflash

This is the low-output flash fired before the main flash is fired in synchronization with the shutter. It is used for measuring the subject distance and evaluative metering.  
See page 4.

## Recycling time

Speedlites use a capacitor to store electrical energy for the high voltage required by the flash. When a flash is fired, the capacitor is discharged and then recharged for the next flash. The recycling time is the time it takes the capacitor to recharge after firing.  
See page 27.

## Red eye

This refers to the red dots in the eyes of the subject in a photograph taken with a flash. It is prone to occur when the person's pupil is wide open (in low light), the flash is mounted near the camera lens, and the flash reflects off the retina's red capillaries. With red-eye reduction, an incandescent lamp shines or a preflash is fired to shrink the pupil's diameter and lessen the likelihood of red eye.

## Slave unit

This is a flash unit that fires in response to the firing of a master flash unit. For example, Speedlite 550EXs/430EXs can be used as slave units that fire when high-speed pulses are received from a Speedlite Transmitter ST-E2 or Speedlite 550EX, MR-14EX or MT-24EX set as a master unit.

## Stroboscopic flash

This is a series of flashes fired in a single burst while the shutter is open. Stroboscopic flash is effective for capturing the movement (for later analysis) of a moving subject against a dark background.  
See page 15.

## Synchronization

Firing of the flash at the moment the first and second shutter curtains are fully open.  
See page 5.

## White balance

A function in digital cameras that allows colours to be corrected, based on the colour temperature of the light source, to ensure faithful colour reproduction. Auto white balance, selectable pre-set white balance modes for different light sources, and manual white balance settings are provided. The preset daylight mode provides warm colours in incandescent light and a bluish tint in fluorescent light or shade. The colour temperature of a flash is almost the same as sunlight.

## Wide panel

A translucent panel that extends flash coverage when fitted to the flash unit's light-emitting component. Speedlite 580EX and 430EX include a built-in slide-type wide panel.

## X-sync

This is an electrical contact that enables the flash to fire when the shutter is fully open. In SLR cameras equipped with a focal-plane shutter, the x-sync speed is the fastest shutter speed at which the first and second shutters are fully open.

# Flash lineup and related Canon accessories



## Speedlite



### Speedlite 580EX (including case)

This fully featured, high-output Speedlite can brightly illuminate an extremely broad area. It supports lenses with angles of view between 24-105mm, as well as super-wide 14mm lenses (with use of built-in wide panel). Full swiveling allows a left and right bounce angle of 180°. Various lighting techniques are possible, including high-speed sync, FE lock and multiple and wireless autofocus. Colour temperature data is transmitted to the camera and flash zoom coverage is automatically optimized on compatible cameras.

- Max. guide number: 58/190 (ISO100 in m/ft) • Custom Functions: 14 • 4 AA-size batteries (alkaline, lithium, or Ni-MH)
- Terminal for external power source • Dimensions (mm/inch): 76 x 134 x 114 / 3.0 x 5.3 x 4.5
- Weight (g/oz): 375/13.2 (excluding batteries)

#### Recycling time and flashes per charge

Battery	Recycling time	Flashes per charge
AA-size alkaline (4)	Approx. 0.1 - 6 sec.	Approx. 100-700



### Speedlite 430EX (including case)

The compact clip-on Speedlite 430EX offers nearly the same basic functions as the 580EX, including expansive illumination and broad bounce angles, as well as advanced digital features. This model is ideal as a slave unit for use in multiple flash photography.

- Max. guide number: 43/141 (ISO100 in m/ft) • Custom Functions: 6 • 4 AA-size batteries (alkaline, lithium, or Ni-MH)
- Dimensions (mm/inch): 72 x 122 x 101 / 2.8 x 4.8 x 4.0 • Weight (g/oz): 330/11.6 (excluding batteries)

#### Recycling time and flashes per charge

Battery	Recycling time	Flashes per charge
AA-size alkaline (4)	Approx. 0.1 - 3.7 sec.	Approx. 200-1400



### Speedlite 220EX (including case)

This model supports angles as wide as 28mm and features a Save Energy (SE) function that automatically terminates power after 90 seconds of inaction.

- Max. guide number: 22/72 (ISO100 in m/ft) • 4 AA-size batteries (alkaline, lithium, or Ni-MH)
- Dimensions (mm/inch): 65 x 92 x 61.3 / 2.6 x 3.6 x 2.4 • Weight (g/oz): 160/5.6 (excluding batteries)

#### Recycling time and flashes per charge

Battery	Recycling time	Flashes per charge
AA-size alkaline (4)	Approx. 0.1 - 4.5 sec.	Approx. 250-1700



### Speedlite Bracket SB-E1

Compatible with Speedlite 580EX and 430EX, and featuring three levels of height adjustment, this bracket helps prevent unnatural shadows on the sides of objects when shooting from a vertical position. Useful for shooting portraits.

- 2 off-camera shoe cords included
- Weight (g/oz): 295/10.4
- SB-E1 availability depends on region.

## Flash units for macro shooting



### Macro Ring Lite MR-14EX\*

A twin-tube ring flash with ratio lighting control (1:8 - 8:1, 1/2 step increments) and the ability to fire a single tube only, Macro Ring Lite MR-14EX supports various functions including high-speed sync, FE lock and modeling flash. This model can also function as a master unit for wirelessly controlling slave units.

- Max. guide number: 14/46 (ISO100 in m/ft) • Custom Functions: 7 • Minimum distance of autofocus metering: approx. 20mm
- 4 AA-size batteries (alkaline, lithium, or Ni-MH) • Terminal for external power source
- Control unit dimensions (mm/inch): 74 x 125.9 x 97.4 / 2.9 x 4.9 x 3.8
- Flash ring dimensions (mm/inch): 112.8 x 126 x 25.6 / 4.4 x 5.0 x 1.0 • Weight (g/oz): 430/15.1 (excluding batteries)

#### Recycling time and flashes per charge

Battery	Recycling time	Flashes per charge
AA-size alkaline (4)	Approx. 0.1 - 7 sec.	Approx. 120-800

\* 72C Macro Lite Adapter required when using MR-14EX with EF 180mm f/3.5 L Macro USM lens.



### Macro Twin Lite MT-24EX\*

This flexible twin-head flash unit provides separate illuminating angle adjustment (tilt angle: 45° above - 45° below, 60° inward - 30° outward; arm angle: 50° above - 30° below), ratio lighting control (1:8 - 8:1, 1/2 step increments), and single head illumination capability. It also supports various functions including high-speed sync, FE lock, and modeling flash, and can function as a master unit for wirelessly controlling slave units.

- Max. guide number: 24/79 (ISO100 in m/ft) • Custom Functions: 9 • 4 AA-size batteries (alkaline, lithium, or Ni-MH)
- Terminal for external power source • Control unit dimensions (mm/inch): 74 x 125.9 x 97.4 / 2.9 x 4.9 x 3.8
- Illuminating component dimensions (mm/inch): 235 x 90.4 x 49 / 9.2 x 3.5 x 1.9
- Weight (g/oz): 585/20.6 (excluding batteries)

#### Recycling time and flashes per charge

Battery	Recycling time	Flashes per charge
AA-size alkaline (4)	Approx. 0.1 - 7 sec.	Approx. 120-800

\* When shooting near the minimum distance range of autofocus metering, the aperture should be set to 3 steps short of fully open.  
\* 72C Macro Lite Adapter required when using MT-24EX with EF 180mm f/3.5 L Macro USM lens.  
\* Use of an optional hood is recommended when macro shooting with MP-E 65mm f/2.8 1-5x Macro Photo Lens.

## Speedlite External Power Supply

### Compact Battery Pack CP-E3



This pack holds eight AA-size batteries and features a removable magazine that allows quick battery changing.

- 8 AA-size batteries (alkaline, lithium, or Ni-MH)
- Weight (g/oz): 220/7.8 (excluding batteries)

### Battery Magazine CPM-E3



This serves as an optional replacement or backup magazine for the CP-E3.

- 8 AA-size batteries (alkaline, lithium, or Ni-MH)

## Transmitter

### Speedlite Transmitter ST-E2\*



When attached to the camera's accessory shoe, this transmitter allows wireless control of Speedlite 580EX and/or 430EX slave units. The brightness and lighting ratio of multiple units can be controlled through E-TTL II autofocus metering, and an AF auxiliary flash function for area autofocus is provided.

- Power: 1 lithium battery (2CR5)
- Weight (g/oz): 100/3.5

\* Multiple flash control and lighting ratio control are supported by EOS-1v, EOS-3, EOS 30V/33V/30, EOS 300X, EOS 300V, EOS 3000V, EOS-1Ds series, EOS-1D series, EOS 5D, EOS 30D, EOS 20D/20Da, EOS 10D, EOS D60, EOS D30, and EOS 350D DIGITAL and EOS 300D DIGITAL.

\* The lighting ratio between slave units can be manually controlled with other EOS models not listed above.

## Accessories for Wired Multiple Flash

### Off-Camera Shoe Cord 2



This 60cm/2ft connector cord is convenient for using a Speedlite apart from the camera and supports all Speedlite functions.

### TTL Hot Shoe Adapter 3\*



This adapter provides a socket for multiple flash units. It can be connected to the camera's hot shoe or to Off-Camera Shoe Adapter OA-2 and a TTL distributor.

### Off-Camera Shoe Adapter OA-2\*



This adapter is convenient when using a Speedlite apart from the camera and features a tripod mount underneath. It can be connected with the camera via connecting cord and TTL Hot Shoe Adapter 3.

### TTL Distributor\*



TTL Distributor serves as a hub for linking TTL Hot Shoe Adapter 3 with multiple Speedlites. It can also connect up to three OA-2 Off-Camera Shoe Adapters.

### Connecting Cord 60\*



Length: approx. 60cm/2ft

### Connecting Cord 300\*



Length: approx. 300cm/10ft

\* TTL autofocus metering is supported when combined with an E-TTL-compatible Speedlite. Automatic zoom is not supported.

Not compatible with EOS 300X, EOS-1Ds series, EOS-1D series, EOS 5D, EOS 30D, EOS 20D/20Da, EOS 10D, EOS D60, EOS D30, EOS 350D DIGITAL and EOS 300D DIGITAL.

# Speedlite 580EX/430EX support for EOS camera functions



## EOS

Model	Highest shutter speed with flash synchronization (sec.)					Metering method			High-speed sync	FE lock	Wireless support		Flash Exposure compensation		Modeling flash	Second-curtain sync
	1/90	1/125	1/200	1/250	1/500	E-TTL II	E-TTL	TTL <small>(with C.Fn-03-1 setting)</small>			E-TTL	M/Multi	Flash	Camera		
EOS-1v				○		×	○	○	○	○	○	○	○	○	○	○
EOS-3			○			×	○	○	○	○	○	○	○	○	○	○
EOS 30V / 33V		○				○	×	○	○	○	○	○	○	○	○	○
EOS 30 / 33		○				×	○	○	○	○	○	○	○	○	○	○
EOS 50E		○				×	○	○	○	○	○ <small>Single-group control</small>	○	○	○	×	○
EOS 300X		○				○	×	×	○	○	○	○	○	×	○	○
EOS 300V	○					×	○	○	○	○	○	○	○	×	○	○
EOS 3000V	○					×	○	○	○	○	○	○	○	×	×	○
EOS 300	○					×	○	○	○	○	○ <small>Single-group control</small>	○	○	×	×	○
EOS 500N	○					×	○	○	○	○	○ <small>Single-group control</small>	○	○	×	×	○

## EOS DIGITAL

Model	Highest shutter speed with flash synchronization (sec.)					Metering method			High-speed sync	FE lock	Wireless support		Flash Exposure compensation		Modeling flash	Second-curtain sync	Display-size zooming control	Colour temperature data transfer
	1/90	1/125	1/200	1/250	1/500	E-TTL II	E-TTL	TTL			E-TTL	M/Multi	Flash	Camera				
EOS-1Ds Mark II				○		○	×	×	○	○	○	○	○	○	○	○	○	
EOS-1Ds				○		×	○	×	○	○	○	○	○	○	○	×	×	
EOS-1D Mark II N				○		○	×	×	○	○	○	○	○	○	○	○	○	
EOS-1D Mark II				○		○	×	×	○	○	○	○	○	○	○	○	○ <small>Requires firmware version 1.0.3 or later</small>	
EOS-1D					○	×	○	×	○	○	○	○	○	○	○	×	×	
EOS 5D			○			○	×	×	○	○	○	○	○	○	○	○	○	
EOS 30D				○		○	×	×	○	○	○	○	○	○	○	○	○	
EOS 20D/20Da				○		○	×	×	○	○	○	○	○	○	○	○	○	
EOS 10D			○			×	○	×	○	○	○	○	○	○	○	×	×	
EOS D60			○			×	○	×	○	○	○	○	○	○	○	×	×	
EOS D30			○			×	○	×	○	○	○	○	○	○	○	×	×	
EOS 300D DIGITAL			○			○	×	×	○	○	○	○	○	○	○	○	○	
EOS 350D DIGITAL			○			×	○	×	○	○	○	○	×	○	○	×	×	

**Canon**