


PROMASTER®

MacroLume TTL

DIGITAL



**Electronic Flash
Operating Instructions**



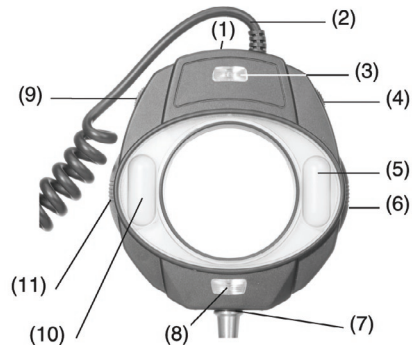


Welcome to the world of macro flash photography

The PROMASTER MACROLUME TTL DIGITAL electronic flash is the perfect macro flash solution for both digital and traditional cameras. The MacroLume TTL Digital fits many different cameras using PROMASTER's 5000 Series custom dedicated modules. The TTL Auto flash function gives you accurate macro exposures with ease. Use the MacroLume TTL Digital with your favorite SLR or digital point and shoot camera* to make your close-up photography come to life.

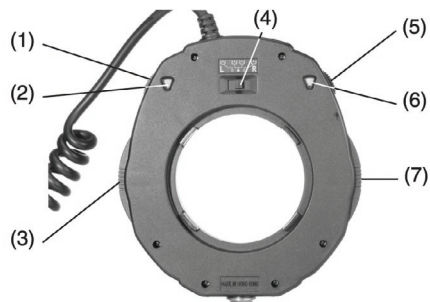
** Digital point and shoot cameras require the use of an optional lens adapter tube in order to mount the flash.*

Parts Identification



Flash Head (Front view)

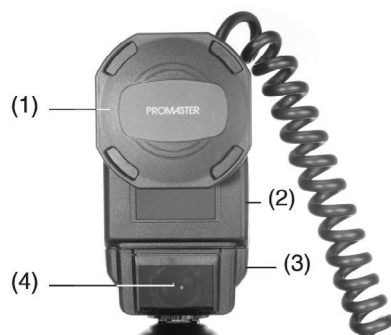
- 1) Flashtube Housing
- 2) Flashtube Power Cord
- 3) Upper Focusing Assist Lamp
- 4) Right Flash Tube Diffuser Control Wheel
- 5) Right Flashtube Reflector
- 6) Right Mounting Ring Release Button
- 7) 1/4-20 Tripod Mount
- 8) Lower Focusing Assist Lamp
- 9) Left Flash Tube Diffuser Control Wheel
- 10) Left Flashtube Reflector
- 11) Left Mounting Ring Release Button



Flash Head (Back View)

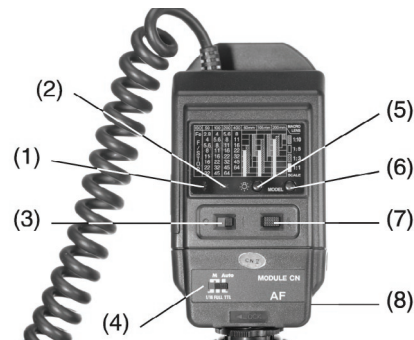
- 1) Left Flash Tube Diffuser Control Wheel
- 2) Left Flash Tube Diffuser Position Window
- 3) Left Mounting Ring Release Button
- 4) Flashtube Selector Switch
- 5) Right Flash Tube Diffuser Control Wheel
- 6) Right Flash Tube Diffuser Position Window
- 7) Right Mounting Ring Release Button

Parts Identification (cont'd)



Power Supply (Front View)

- 1) Macro Flash Head Mounting Interface
- 2) Battery Compartment Cover
- 3) Optional TTL Dedicated Camera Adapter
- 4) Auto Focus Infrared Assist Beam



Power Supply (Back View)

- 1) Flash Ready Indicator Light
- 2) Auto Check Indicator Light
- 3) Power Switch
- 4) Flash Exposure Mode Selector on Optional AF Module
- 5) Auto Focus Assist Illumination Lamp Button
- 6) Pulsed Modeling Lamp Button
- 7) Test Button
- 8) Optional Dedicated TTL Module

Key Features

Selectable Flash Modes

Choose from three different flash exposure modes, Manual, Automatic and TTL Mode with the proper 5000 series dedicated module.

Fully Dedicated

In the Automatic and TTL modes, the PROMASTER MacroLume will automatically set the proper flash synchronization and lens aperture. LED indicators inside the viewfinder display of most cameras confirm the flash ready status. TTL flash exposure is confirmed as a blinking LED.

Built-in Power Ratio Setting

In Manual mode, the MacroLume may be set for Full or 1/16th power output. This setting provides exposure control for close-ups, freezing action, rapid sequence photography and fill-in flash.

5000 Series Module Dedication

With the PROMASTER's convenient interchangeable module system, the MacroLume offers fully dedicated TTL Flash operations with both digital and traditional cameras.

Pulsed Modeling Lamp

The built-in pulsed modeling lamp provides high intensity illumination to aid in adjusting the lighting ratio between the dual flashtubes.

Focus Assist Lamps

The Focus Assist Lamps provide continuous illumination to aid the camera's Auto Focus system as well as being helpful in achieving critical focus in the manual focus mode or with manual focus cameras.

Multiple Mounting Options

The MacroLume flash tube housing can be mounted independently via its 1/4-20 tripod mounting thread, attached to the power supply, or mounted on your lens for the maximum in lighting flexibility.

Tilting Power Supply Interface

The Tilting Power Supply interface allows UP/DOWN tilting of the MacroLume flash housing while mounted on the power supply for more effective lighting control.

Flash Tube Selector Switch

Both the left and right flash tubes can fire simultaneously or individually by setting the Flash Tube Selector Switch for more creative control.

Dual Flash Tube Diffusion Filters

The diffusion level of each flash tube can be controlled independently using the built-in adjustable Flash Tube Diffusers. The diffusers provide added exposure and light balancing control.

Installing the batteries

- 1) Open the battery compartment cover by sliding the door in the direction of the arrow.
- 2) Insert four, 1.5 volt AA batteries. Be sure to insert batteries in the direction indicated by the (+) and (-) sign inside the battery compartment.
- 3) Replace the battery compartment door by sliding the door back into the grooves and lock in place.

IMPORTANT:

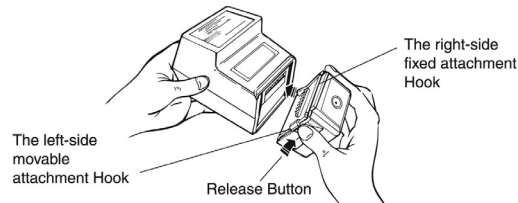
- The batteries must be inserted in the correct position in order to power the flash.
- For best results, use only fresh alkaline batteries or PROMASTER XtraPower NiMH rechargeable batteries.



Attaching and Detaching the Dedicated Module

The MacroLume Digital TTL requires a PROMASTER 5000 series dedicated module to operate. PROMASTER dedicated modules are available for many different cameras and new modules are always being introduced to insure compatibility with today's latest cameras. Consult your PROMASTER dealer or www.promaster.com to select the correct dedicated module for your camera. Flash operation varies from camera model to camera model. Be sure to read the instruction manual for your camera for details of proper flash operation for your model.

- 1) To attach the module, position the attachment hook on the right side (when viewed from the front of the flash) of the module onto the flash unit and then push the left-side of the module upward until the left-side attachment hook clicks into position.
- 2) To detach the module, press the release button on the left side of the module. While pressing the button, detach the module.



IMPORTANT:

- When attaching the module onto the flash unit or detaching the module from the flash unit, always make sure that the power of the flash unit has been switched OFF.
- **DO NOT** attach the flash unit to the module while the module is mounted on the camera.
- **Always make sure that the power of the flash unit has been switched OFF when mounting the flash to your camera.**
- **Only use the dedicated module designed for use with your camera. Using the incorrect module may cause damage to your camera, the flash unit, the module, or all of the above.**
- **Before attaching the module onto the flash unit, always make sure that the module and the flash unit contact points are clean and free from dirt. Dirt on the surface of the contact points on the module or flash unit may cause your flash to malfunction. You may use a soft cloth to clean the contact points of both units.**

It is important to follow the above instructions. Otherwise, you may cause damage to the flash unit, the module, the camera or all of the above.

Mounting the MacroLume Flash Head on the Power Control Housing.

- 1) The MacroLume flash head can be attached to the power supply control housing for close-up photography. The MacroLume flash head will tilt UP/DOWN once it is attached to the interface.
- 2) The position of the flash reflector tubes can be positioned vertically or horizontally to allow for the correct lighting of the subject.
- 3) To attach the MacroLume flash housing to the power supply control housing, press the mounting buttons on both sides of the MacroLume flash housing and clip over the interface plate.



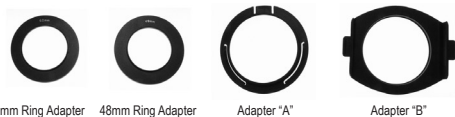
Mounting the MacroLume flash Head on your camera lens for Macro Photography

- 1) Mount the correct mounting ring to your camera lens and fasten securely. 49mm and 52mm rings are included. For other sizes, an adapter plate (adapter A, page 10) is included that allows the use of Cokin "P" series mounting rings. (Cokin "P" series rings are available in sizes from 48mm to 82mm and some bayonet sizes.)
- 2) Attach the MacroLume flash head to the mounting ring by pressing the mounting buttons on both sides of the MacroLume flash housing and insert over the mounting ring.
- 3) The position of the flash reflector tubes can be positioned vertically or horizontally to allow for the correct lighting of the subject.



Adapter Plate

PROMASTER has added to your creative experience, by including a special adapter plate that allows you to mount a Cokin “P” series filter holder to your MacroLume flash housing. This is the perfect solution for using colored or special effects filters in macro photography.



Variable Power Function

In Manual Flash operation, the flash can be set to 1/16th power output position. In this position faster recycling time and more number of flash exposures is possible. It is useful in close-up macro photography and while shooting with a motor-driven camera (up to 2 frames per second). The guide number at this lower power setting is 1/4 of the full guide number (see Guide and Table, page 20).

Auto Focus Illuminator

When the camera's operating button is pressed halfway, the Auto Focus Illuminator is automatically activated, when required. This illumination enables the camera's auto focus system to determine proper focus with low-contrast subjects in low light.

The Auto Focus Illuminator enables the auto focus mechanism to function with subjects up to about 16 feet away in very low light levels. When focusing manually the distance will be greater based on the maximum aperture of your lens. (Refer to the TTL Auto Flash range table, page 12).

NOTE: The working range for the Auto Focus Illuminator is based on standard test method with a 50 mm lens. If longer focal lengths are used the minimum focusing distance of the lens may exceed the range of the Auto Focus Illuminator. In this case or if the focus confirmation signal in your viewfinder blinks, set the focus mode of the camera and/or lens to manual and focus lens manually

Focus Assist Lamp

When the available light is too low to allow normal auto focus operation, the focus assist lamp can be used to illuminate the dark subjects.

- 1) Press the auto focus assist lamp button to turn the lamp on
 - 2) Press the auto focus assist lamp button again to turn the lamp off.
- The auto focus assist lamp turns off automatically after approximately 1 minute or if the flash is fired.
 - Be sure to turn off the auto focus assist lamp before shooting to insure proper exposure.

Pulsed Modeling Flash

The Pulsed Modeling Flash feature helps you to view the effects of the flash illumination and see how the shadows will look in relation to your subject before actually taking the picture. When the flash ready light comes on, press the modeling lamp button to activate the Pulsed Modeling Flash.

Dual Flash Tube Diffusion Filters

The built-in Dual Flash Tube Diffusion filters provide added exposure and light balancing control. The brightness of the flashtube illumination can be reduced to approx. 1/4 of the flash output by using the Flash Tube Diffusion Filter to cover the flashtube reflector. Activate the filter by rotating the Flash Tube Diffusion Wheel (#1 and #5) in the desired direction.

Auto Check Lamp/Flash Test Button

In the TTL Auto flash mode or Normal Auto flash mode, if the flash output was sufficient to produce a proper exposure the auto check lamp on the flash unit glows when shutter button of the camera is pressed. In the Normal Auto flash mode, before actually taking the photos, you can check whether the shooting distance is within the automatic range by pressing test flash button on the flash unit.

Auto Power-Off

The MacroLume Digital features battery-saving automatic power-off circuitry. The flash unit will automatically turn off within approximately 5 minutes and the LED flash ready lamp will be extinguished. With some module and camera combinations, the flash can be re-activated for firing by touching the shutter-release button of the camera. With other modules, the flash can be re-activated for firing by pressing the Reset flash button on the flash unit or by switching the flash unit OFF and then ON again.

TTL Auto Flash Operation

The MacroLume Digital TTL provides automatic Through-The-Lens (TTL) control of the flash exposure when the proper 5000 Series dedicated module is used with the TTL Auto Flash Metering features of your camera. This auto mode permits the use of any lens aperture within the flash unit's operating range to enable greater control of depth of field. The larger the aperture (smaller f-number ex- f-2.8) selected, the greater the maximum shooting distance (less depth of field, shorter recycle time). The smaller the aperture (bigger f-number ex- f-16) selected, the shorter the flash shooting distance (more depth of field, longer recycle time).

The TTL mode of this flash unit balances the exposure between the main subject illuminated by flash and the background in ambient light, whenever possible. Thus, this TTL mode can be used under conditions ranging from total darkness to fill-in flash scenarios.

Three factors to consider when choosing an aperture:

- Maximum Flash shooting distance
- Depth of Field
- Flash Recycling time

TTL AUTO FLASH RANGE: (APPROX.)

ISO Film or Sensor Sensitivity In Use				Maximum Shooting Distance (ft)	
100	200	400	1000	Dual Flashtube	Single Flashtube
1.4	2	2.8	4.2	5.7	28.6
2	2.8	4	5.6	18.0	20.0
2.8	4	5.6	8	12.9	14.3
4	5.6	8	11	9.0	10.0
5	6.8	11	16	6.4	7.1
8	11	16	22	4.5	5.0
11	16	22		3.3	3.6
16	22			2.3	2.5
22				1.6	1.8

Over or Underexposure results with TTL

When using TTL for extreme close-up or macro photography it is possible for the camera's metering system to fail in responding fast enough. In the event that TTL exposures are over or underexposed, use the following coefficient to solve the problem. $F/stop$ (maximum aperture*) = Coefficient / flash-to-subject distance (m/ft)

ISO Film Speed	100 or below	125-400	500 or more
Coefficient	2/6.6 (m/ft)	4/13 (m/ft)	5.6/18 (m/ft)

*The aperture where overexposed pictures may result in TTL or Auto flash operation if a larger aperture (smaller f/stop) than that is used.

For Example, when shooting a subject at a distance of 0.25m (0.82ft) using ISO 100 film, the correct aperture is:

$$f/stop = 2 \text{ (Coefficient)} / 0.25 \text{ (m) (flash-to-subject distance)} = 8$$

$$f/stop = 6.6 \text{ (Coefficient)} / 0.82 \text{ (ft) (flash-to-subject distance)} = \text{approx. } 8$$



Manual Flash Mode

Use Manual Flash M mode, if your camera does not support TTL auto flash operation.

Flash output levels of M and M1/16th can be selected.

M : Flash fires at full output

M 1/16th : Flash fires at 1/4 of the full guide number.

- 1) Set the flash mode selector to M1/16th or M
- 2) Adjust your camera
 - Set your camera's exposure mode to Aperture-priority auto A or Manual M.
 - Set your camera's metering system to any setting.
 - The shutter speed is automatically set to the flash sync speed, depending on your camera's make and model, or you can manually set the shutter speed to one slower than the flash sync speed.
- 3) Set the appropriate aperture on the camera or lens aperture ring.

At a reproduction ratio of less than 1:10, use this equation to determine the correct aperture:

$F/\text{stop (aperture)} = \text{guide number} / \text{flash-to-subject distance (m)}$

At a reproduction ratio of 1:10, use of this equation is not recommended as it is difficult to obtain the correct aperture.

- With Micro-lenses mounted on the camera, refer to the "Aperture/reproduction ratio panel." For example, when shooting with an AF Micro 60mm f/2.8 lens using ISO 100 film, determine an appropriate aperture by referring to the "Aperture/reproduction ratio panel."
- At a 1:5 reproduction ratio, the effective f-stop for the correct exposure is f/32 at Manual (full) and f/16 at Manual (M1/16th) flash output.
- When a lens with a built-in CPU is mounted on the camera and when you set the aperture in the camera's viewfinder or on the LCD panel, the aperture value appearing on the LCD panel or in camera's viewfinder is the effective f-number. Set this value on the camera.
 - When a lens without a built-in CPU is mounted or no aperture value is displayed in the viewfinder, calculate the effective f-number using the aperture set on the lens according to the reproduction ratio, then determine an appropriate aperture by referring to the "Aperture/reproduction ratio panel."

For example:

At a 1:10 reproduction ratio, the effective f-number is approx. 1/3 of an f/stop smaller than the aperture set on the lens.

At a 1:5 reproduction ratio, the effective f-number is approx. 1/2 of an f/stop smaller than the aperture set on the lens.

At a 1:3 reproduction ratio, the effective f-number is approx. 2/3 to 1 f/stop smaller than the aperture set on the lens.

At a 1:1 reproduction ratio, the effective f-number is approx. 2 f/stops smaller than the aperture set on the lens.

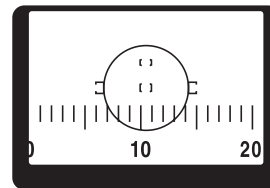
NOTE: In close-up flash photography where exposures are often affected by the ambient light, it's good idea to take additional shots at various aperture settings. (Refer to "Exposure compensation in close-up flash photography.")

Reproduction Ratio and the "Aperture/Reproduction Ratio Panel"

- Determining the Reproduction Ratio

For lenses in normal position, read the number engraved on the lens focus ring. It is usually in the form of 1:n or 1/n. When using a bellows focusing attachment, refer to its instruction manual. For other lenses, follow these procedures to determine the reproduction ratio:

1. Place a ruler in the same plane as the subject, then read the subject's length as seen in the viewfinder. (see below)



The subject's length is 21mm in this example.

2) Calculate the reproduction ratio by using this equation:

$M = 36/L$ Where: M = Reproduction ratio

36 = Length of the long side of the viewfinder frame (varies depending on camera in use)

L = Length of the subject as seen in the viewfinder

- The viewfinder frame size is 24 x 36mm for cameras having 100% frame coverage and 21 x 32mm for cameras with 90% frame coverage.
- In the above example, the viewfinder frame size is 24 x 36mm. Since the subject appears as approximately 21mm along the long side of the viewfinder frame, the reproduction ratio (M) is: $M = 36/21 = \text{approx. } 1.7x$

If you measure the length of the subject by placing a ruler along the short side of the viewfinder frame, use the equation $M = 24/L$

Or if the viewfinder frame size is 21 x 32mm, the reproduction ratio (M) is $32/21 = \text{approx. } 1.5x$. Likewise, if you measure the subject by placing the ruler on the short side of the viewfinder frame, the reproduction ratio is determined by the equation $M = 21/L$.

- Aperture to set on the Lens and Effective F-number

Effective f-numbers of macro lenses vary and the brightness of images on the film decrease when the reproduction ratio increases. The relationship between the reproduction ratio and the effective f-number is: $Fe = F (1+M)$

Where: Fe = Effective f-number (actual lens speed)

F = Aperture to set on the lens

M = Reproduction ratio

- For examples, to obtain a 1:1 (life-size) reproduction ratio at an aperture of f/8 set on the lens, $Fe = 8 (1+1) = 16$. The effective f-number is 16, which is two stops darker. Effective f-numbers are displayed on the MacroLume TTL "Aperture/reproduction ratio panel."

To obtain the correct exposure in the TTL auto flash operation proceed as follows:

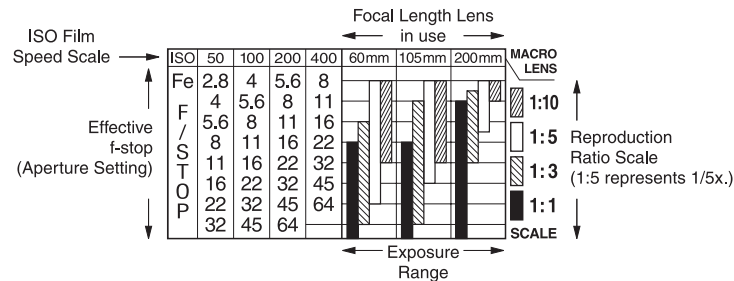
- The aperture value appearing on the LCD panel or in the camera's viewfinder is the effective f-number when a lens with a built-in CPU is mounted on the camera.
- When a lens without a built-in CPU is mounted or no aperture value is displayed in the viewfinder calculate the effective f-number using the above equation after setting the aperture on the lens.

Determining a Proper Flash Shooting Distance Range

Using the "Aperture/reproduction ratio panel" (with the lens in normal position)

Use the "Aperture/reproduction ratio panel" on the back of the Promaster MacroLume Power Supply Controller to determine the usable aperture at the desired reproduction ratio. The proper aperture depends on the ISO film speed, lens focal length and the desired reproduction ratio.

NOTE: The figures on the panel are effective f-stops. They are not apertures on the lens.



- The settings and scales on the Aperture/reproduction ratio panel are for use with Auto Focus Micro 60mm f/2.8, 105mm f/2.8 and 200mm f/4 lenses.

NOTE: If you are using an AF Zoom Micro lens determine the appropriate figures on the panel depending on the focal length set on the lens. Apply this to other lenses.

- For example, at a 1:5 reproduction ratio with ISO 100 film and the AF Micro 60mm lens, the usable apertures are from f/4 to f/32.

Exposure Compensation in Close-up Flash Photography

In close-up macro photography, it's recommended to expose several images with varying exposures to ensure the correct exposures.

Exposure Compensation in TTL Auto Flash "TTL" mode

- Refer to your camera's instruction manual for details on how to set the flash exposure compensation for your camera. Some cameras may not offer this feature. In this situation, adjusting exposure compensation is not possible.
- When shooting a subject containing highly reflective surfaces, add (+) compensation. When the background is very dark, or the subject is in deep shadow use less (-) compensation.
- Normally you can compensate exposure within a range of -2EV to +1 EV.

Four Great Tips for Macro Photography Jenni Bidner

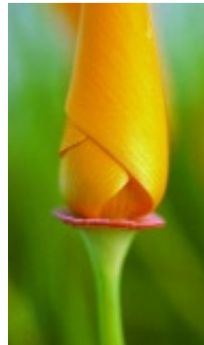
Isolate Your Subject

Most of the best close-up images have a single, strong subject that stands out from the background.

This can be achieved in several ways. You can position the subject or camera so that the background is further away. You can select a wider aperture, such as f/4. Or you can use a ring flash to illuminate the subject, while allowing a more distant background to go black.

It's Hard to Get Everything in Focus

The more you magnify the subject on film, the smaller the plane of sharp focus becomes. Even at f/22 or f/32 you may not be able to get everything in the picture in sharp focus. Go with it! Design the photograph so that the limited depth-of-field works in your favor.



Keep Subject Parallel to Film Plane

Position your camera or subject so that the most important aspects of the subject are parallel with the film plane (the back of the camera). For example, with a praying mantis, this would mean you are photographing it in profile. The two images at right were shot at the same aperture (f/2.8).

Use a Macro Flash!

A macro flash like the PROMASTER MacroLume TTL Digital is designed specifically for lighting close-up subjects. The ring portion of the MacroLume fits around the lens while the control unit attaches to the camera's hotshoe. Dual flash tubes include built in variable diffusers for individually controlled dramatic lighting effects. The rotating mounting assembly lets you position the flash head on your lens for maximum creative control.

PROMASTER MacroLume Digital ELECTRONIC FLASH

Specifications

Power Source: 4 (1.5 Volt) "AA" Alkaline Batteries or Rechargeable Batteries
Recycling Time: Automatic 0.3 to 10 sec
Manual 6 to 10 sec
Battery Life: Approx. 100 to 700 flashes (Depends on the type of batteries and flash distances)
Flash Duration: 1/1400 sec at full power manual mode with dual tubes
1/1250 sec at full power manual mode with single tube
Modeling Light Duration of Illumination: Approx. 3 sec at approx. 30 Hz (if the flash is fully charged)
Sensor Measuring Angle : 20 degrees

Guide Number Table (in feet) for Both Flash Tubes :

ISO Film Speed	ISO 25	ISO 50/64	ISO 100	ISO 200	ISO 400	ISO 800	ISO 1000	ISO 1600
Dual Flashtube	18	25	36	51	72	102	115	144
Single Flashtube	20	28	40	56	80	112	126	157

The Guide Number (GN) when the Macrolume is set for 1/16th power output is 1/4 of the GN above.

Dimensions (W x H x D): Macro Flash Head: 125 x 133 x 27 mm
Power Unit : 67 x 95 x 82 mm
Weight: 376 g (without batteries)

These specifications are subject to change without notice.





PHOTOGRAPHIC RESEARCH ORGANIZATION, INC.
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www.promaster.com

*Promaster is a supplier of premium quality lenses,
digital camera memory, batteries and accessories, binoculars, filters,
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