

# Motion Activated Camera **MAC200 DN**

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## User Manual





# Register@online

<http://www.brinno.com/support/register.html>

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contact us: [customerservice@brinno.com](mailto:customerservice@brinno.com)

more information: [www.brinno.com](http://www.brinno.com)



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FA MI LY !

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## **Thank you for purchasing this Brinno Motion Activated Camera!**

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The Brinno **Motion Activated Camera (MAC200 DN)** is a battery powered, motion activated security camera. Forget the power cord, Ethernet line or DVR system, it is your 100% DIY, 100% Wire-free, 100% portable security anywhere anytime camera. Brinno's new Hybrid Mode® provides 10 X's the Outlook Range over comparable motion activated cameras.

The dual functionality of a fixed capture interval + Motion Activation provides you with an unprecedented portable level of protection. Brinno's exceptional power saving technology, provides super long lasting standby time, combined with our "Rapid Wake Up" functionality, means you will never miss a shot!

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# Motion Activated Camera Features



## 14 Months Battery Life

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The Brinno MAC200 DN needs only 2D batteries for up to fourteen months of power. No need for external power = truly portable.



## Dual Protection

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Brinno's new Hybrid Mode® provides the dual functionality of a fixed capture interval + flexible Motion Activation, providing you with an unprecedented level of portable protection.



## 10x Outlook Range

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Motion Activation Mode provides coverage up to 6 meters. Time Lapse Mode provides over 100 meters of coverage. Images captured at a Fixed Capture Rate in the Time Lapse mode cover over 10 times the area of a standard Motion Activated Camera.



## < 1 Sec. Rapid Wake Up

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All Brinno products have excellent power saving technology, providing super long standby time. Combined with our "Rapid Wake Up" technology, Brinno ensures you will never miss a shot!





## Instant Video/ Fast Playback

The Brinno MAC200 DN captures and converts thousands of photos into a Time Lapse video inside the camera. Review your daily activity with the push of a button.



## 100% DIY

The Brinno MAC200 DN is a battery powered, motion activated security camera. Forget the power cord, Ethernet line or DVR system, it is your 100% DIY, 100% Wire-free, 100% portable security, anywhere, anytime.

### • Output file format

Fast Playback Time Lapse Video, AVI format, resolution is 720P (1280x720).

#### • Package Contents

1. Motion Activated Camera x 1
2. Tree strap x 1
3. Rubber strap x 1
4. Wall Mount x 1
5. User Manual x 1

1



2



3



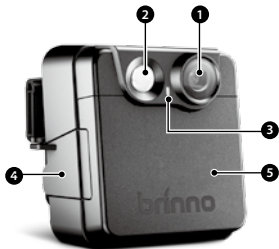
4



5

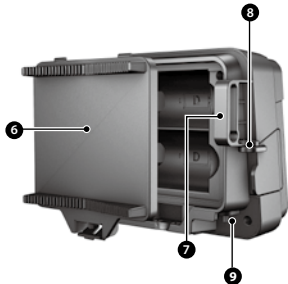


# Parts of the Camera



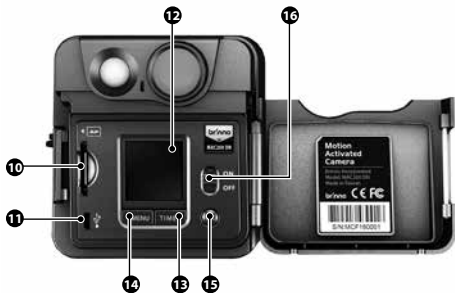
## Front

1. Lens
2. Motion Sensor
3. LED Indicator
4. Operation Control Zone Latch
5. Operation Control Zone Cover



## Back

6. Battery Cover
7. Tree Strap Hole
8. Locking Hole
9. External Power Port (DC IN 5V)



## Inside Operation Control Zone

10. SD Card Slot

11. Micro USB port

12. LCD Panel

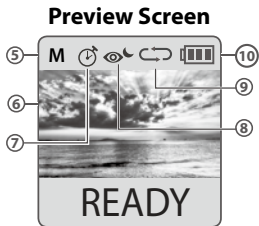
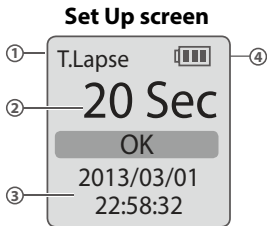
13. TIME / Next (▶) button

14. MENU / Previous (◀) button

15. OK button

16. Power Switch

# Display Icons



## At Set Up screen





### 1. Capture mode:

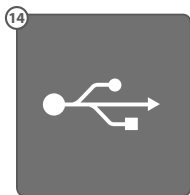
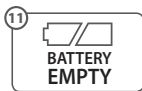
- Motion mode
- Time Lapse
- Hybrid

### 2. Capture Interval/ Capture Rate: Displayed in Time Lapse Mode/ Hybrid Mode

### 3. System date and time

### 4. Battery level

Icon	Description
 (green)	Battery full charged.
 (green)	Battery partially charged.
 (yellow)	Low battery-Replace as soon as possible.
 (red)	Out of battery-Replace battery immediately.



## At Preview screen

### 5. Capture Mode :

- M (Motion mode)
- T (Time Lapse mode)
- H (Hybrid mode)

### 6. Preview Screen

### 7. Timer

### 8. Night Vision Mode

(ON /OFF /AUTO

### 9. Overwrite

### 10. Battery Level

### 11. Battery Empty

Please replace battery immediately.

### 12. SD Card Full

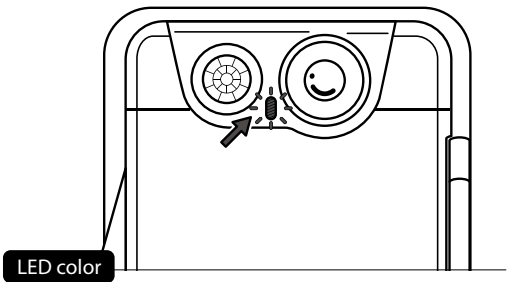
Please download files to clear SD card space.

### 13. SD Card Error

Please replace SD card.

### 14. Connected to computer via micro USB camera.

# LED indicator



LED color

## **Green light:**

- Indicates image capture in process.

## **Red light:**

- Low battery.
- Low recording memory on your SD card.

## **Orange light:**

- PIR sensor is warming up.

# Installation

# Initial Set Up

## Initial Step-1



### Installing the Batteries

Open battery door, insert 2 D batteries and close battery door.



## Initial Step-2



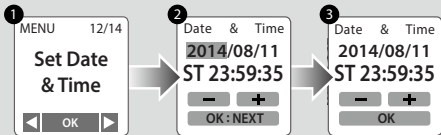
### Installing SD Card

Insert the SD card.

**⚠** We support up to 32GB SD cards. And we recommend you use the maximum SD card to save your files.



## Initial Step-3



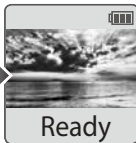
1. To turn on the camera as a Motion Activated Camera, press **< MENU** to go to MENU setting, select Set Date & Time, and press **OK**.
2. The number with the red background is the number you are setting. Press **< MENU** for a lower number or **TIME >** for a higher number. Press **OK** : Next to confirm and go to the next number.
3. When finished press **OK** to exit and return to the Set Up Screen.
4. **ST: Standard Time**  
**DT: Daylight Saving Time**

## How Our Power Saving Technology Works

At Set Up Screen



At Preview Screen



60 sec



- **At Set Up Screen**

After 10 seconds without activity on the set up screen, the camera will go to preview screen automatically. You can press **<MENU** or **TIME >** to go back to the set up screen.

- **At Preview Screen**

After 60 seconds without activity on the set up or preview screens, the LCD screen will turn off automatically to save power. You can press **OK** to wake up.



## Motion Activated Mode

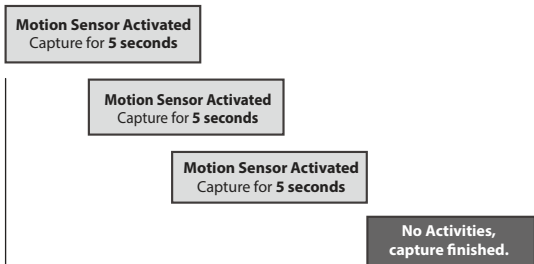
Images captured by Motion Activation are in what we consider the Hot Zone meaning close to the device. Motion Activation captures direct threats up close.

Capture Rate	Captures 2-3 frames per second.
Clip Length	Once activated captures for 5 seconds.
Motion Sensor Detecting Area	Detecting Angle: 100° Detecting Distance: 6M



# Capture Mode

# Motion Activated Mode



**Once activated the Motion Activated Camera will capture for 5 seconds,** during this period if the Motion Sensor is activated again, it will extend the capture time for 5 more seconds. When the motion ceases and the Motion Activated Camera finishes capturing, all the frames will be stored into one AVI file.

# Time Lapse Mode

# Capture Mode



## Time Lapse Mode

Images captured at a Fixed Capture Rate are captured in the Time Lapse mode and cover a range over 100 meters deep in the capture area.

<b>Capture Rate</b>	Captures 1 frame per second~24 hours ( How to set the Capture Interval? please refer to page 18)
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> 100m ( 320 ft )



## Hybrid Mode

Brinno Hybrid Mode combines Fixed Capture Rate and Flexible Motion Detection. They provide Dual Protection in the Hot Zone. In standby mode the camera works in Time Lapse Mode, and the camera will capture images at your desired Capture Rate (2 second~24 hours.) When motion is detected the camera will switch to Motion Mode and capture 2~3 frames per second.

**You will never miss a shot !**

<b>Capture Rate</b>	<b>Time Lapse mode</b> , 1 frame per 2 second~24 hours. <b>Motion mode</b> , capture 2-3 frames in one second.
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## Hybrid Time Lapse Mode

Normally, the Motion Activated Camera is operating in the Time Lapse mode. It features an extended-time and wide angle recording area. The Playback Rate (the film frequency) is custom and based on your setting. (E.g. 1 minute captures 1 photo.)



## Hybrid Motion Mode

When any movement is detected in the Detecting Zone (Detect angle =  $100^\circ$  / Detect distance = 6 M), the Motion Activated Camera will shift to the Motion Mode, and captures 2-3 photos per second. At this range it will record the target in greater detail.



# Start Recording

Before starting recording, please select your capture mode:  
Motion Mode / Time Lapse / Hybrid Mode.

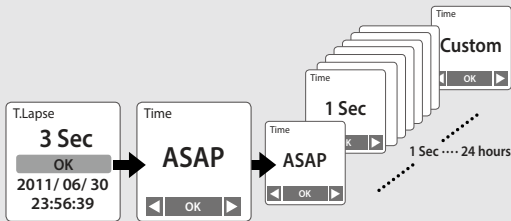
## Motion Activated Mode



1. At the set up screen, press **OK** to go to preview screen.
2. Press **OK** again to start recording. The LCD will display the "• REC" icon.
3. After 5 seconds without any activity, the LCD screen will turn off to save power.



## Time Lapse Mode & Hybrid Mode



1. At the set up screen, press **< MENU** to set a capture interval (capture rate).
2. Press **< MENU** and **TIME >** to select a pre-set capture interval or customize it. When complete, press **OK** to confirm and return to the set up screen.

# Stop Recording

## To Stop Recording



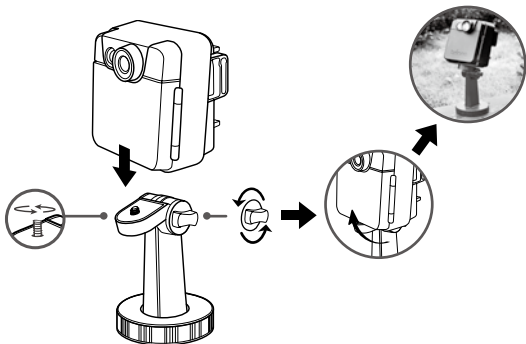
1. Hold **OK** until the LCD screen turns on.
2. The LCD screen will show the “Processing” icon. The Motion Activated Camera is saving your data. Please wait until the icon disappears.
3. Once complete, the LCD panel will return to the preview screen.

# Basic Installation

Mount it anywhere, no power required so anywhere really means anywhere.

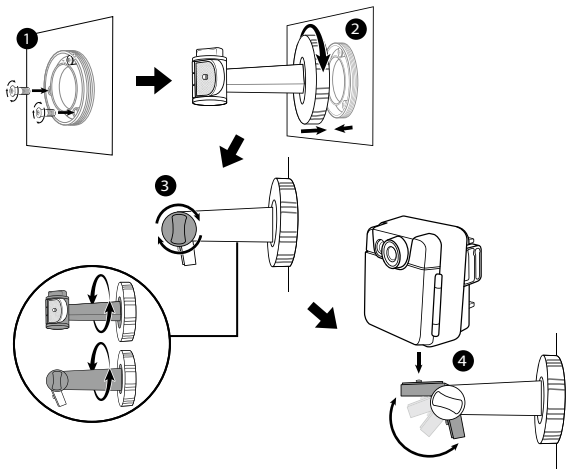
3 ways to mount the camera

## A-1 Wall Mount

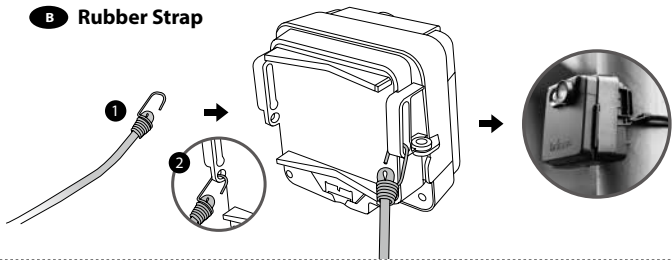


# Basic Installation

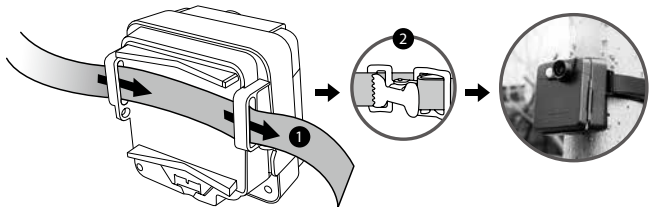
## A-2 Wall Mount



**B Rubber Strap**



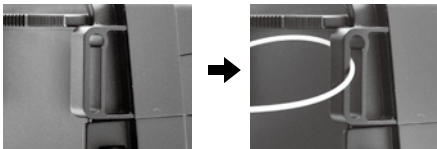
**C Tree strap**



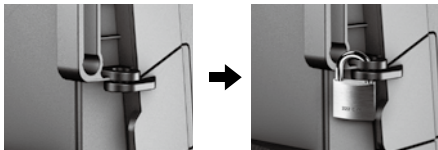
# Basic Installation

## 2 ways to secure the camera safety


### ① Security Lock Cable



### ② Camera Body Lock



## Go to the MENU setting

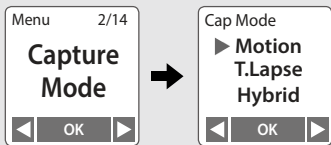
Power on the Motion Activated Camera, press  to go to the MENU setting.

### 1 SD card capacity




In this mode, the LCD will display the SD card capacity, telling you how much free space remains on the SD card.

### 2 Capture Mode



You select your capture mode with this function.

1. Select between :  
Motion = Motion Activated mode.  
T. Lapse = Time Lapse mode.  
Hybrid = Hybrid mode.
2. Press  to confirm.

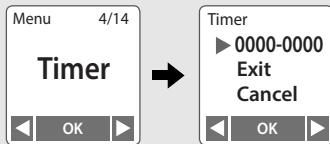



**3 Overwrite**

When the SD card free space is less than 1%, the Overwrite function will remove old files to ensure SD card has more than 1% free space. If you do **not** want the SD Card to be overwritten, and files deleted, select Off.

1. Select On or Off by **< MENU** and **TIME >** .
2. Press **OK** to confirm.

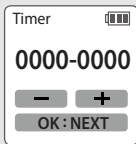
### 4 Timer



This function is used in Time Lapse mode and Hybrid mode. The Timer will allow you to pre-set a recording period. (E.g. 8 am–5 pm) Select 0000-0000 and select  to go to the timer setting menu.

Don't want to set a daily recording time frame, select Cancel to cancel the setting.

## 4 Timer



A B  
0000-0000

e.g.

**0600-1600** morning to afternoon

**1600-2330** afternoon to night

**2345-0500** overnight

1. Set the start recording time (A area), then set the stop recording time (B area). Press **< MENU** to lower the number, press **TIME >** to increase the number and press **OK** to move to the next column.

### 4 Timer

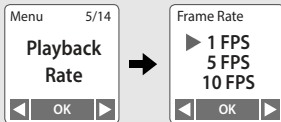


2. After setting the times, return to the set up screen and press **OK** to move to the preview screen.
3. Press **OK** to start recording. The camera will automatically activate at the start recording time you selected.



Once you have activated the Timer, all functions, like Motion Activated mode, Time Lapse mode and Hybrid mode, will only work during the time period selected.

## 5 Playback Rate



You can select the videos FPS (frames per second) playback speed with this setting.

1. Select a FPS number using the **< MENU** and **TIME >** .
2. What Playback Rate should I use?

Generally, 10 FPS is suitable for Time Lapse video, but depending on your needs you can set it to anywhere between 1 - 30 FPS.

**1 FPS** If the video plays at 1 frame per second, the video will not look smooth, and the video length will be longer.

**30 FPS** If the video plays at 30 frames per second, the video will look smooth, and the video length will be shorter.

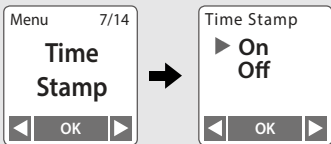
### 6 Image Quality



The image quality setting lets you choose a image quality to fit your needs. The image quality setting will determine the number of frames that can be stored on the SD Card : The higher the quality the fewer images you can store on your SD Card.

Option	Single frame size	Description	4GB capacity SD card
Best	200~400 KB	Low compression rate produces the maximum image data for the highest quality images	≈ 14,000 photos
Better	150~300 KB	General usage	≈ 20,000 photos
Good	70~150 KB	High compression rate produce less image data, best for long capture periods	≈ 30,000 photos

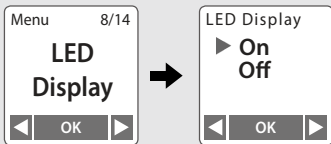
### 7 Time Stamp



You can choose if you want the time stamp to show at bottom of your video. Select On or Off using the **< MENU** and **TIME >** buttons.

1. Select **< MENU** or **TIME >** .
2. Press **OK** to confirm.

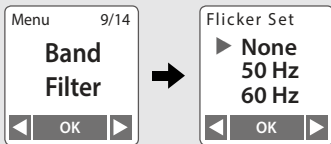


**8 LED Display**

You can choose whether or not the LED will flash while capturing each frame.

1. Select **<MENU** or **TIME>** .
2. Press **OK** to confirm.

### 9 Band Filter



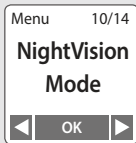
Select the correct fluorescent lighting frequency to match your indoor lighting frequency.

1. Select between : None, 50 Hz and 60 Hz options.
2. None : For outdoor environments  
50 Hz : Europe  
60 Hz : USA

**⚠ We suggest you use None when the scene is outdoors.**

The MAC200 DN is designed to operate in daytime and nighttime environments. The color quality is improved dramatically in daytime and with the addition of the Brinno Night view LED accessory, you will be able to capture events 24's a day.

## 10 Night Vision Mode



Night vision allows you to use the optional Brinno Night Vision LED Light to capture images in low light environments.

**On:** For Night/ Low Light environment use.

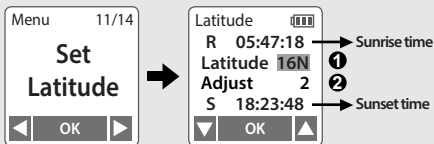
**⚠ IMAGE COLOR MAY VARY SLIGHTLY IN DAYLIGHT.**

**Off:** For Daylight use.

**Auto:** Camera will automatically turn off night vision at sunrise, automatically turn on night vision at sunset.

**⚠ LOCATION LATITUDE SETTING REQUIRED, PLEASE REFER TO PAGE 38 SET LATITUDE.**

### 11 Set Latitude



When you set the Night Vision Mode to AUTO, please set correct the location latitude, so your camera will automatically turn night vision on/ off.

1. Select your locations latitude

**(TO FIND OUT YOUR LOCATION LATITUDE, PLEASE REFER TO PAGE 38)**

2. If the Sunrise & Sunset time is not correct, you can change adjust to select a more close time.

**(HOW TO KNOW SET CORRECT SUNRISE & SUNSET TIMES ? PLEASE REFER TO PAGE 38)**

## How to find your location latitude? Please go to: [www.latlong.net](http://www.latlong.net)

1. Type in your location
2. Get your latitude

The screenshot shows the 'Latitude Longitude Finder' website. A search box contains 'Boston' and a 'Find' button. A callout box with a '1' points to the search box. Below the search box, the results are displayed: Latitude: 42.358431, Longitude: -71.059773. A callout box with a '2' points to the latitude value. To the right, there is a satellite map of Boston with a location pin.

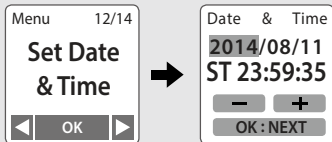
## To know your correct sunrise and sunset time?

Please go to: [www.timeanddate.com/astronomy](http://www.timeanddate.com/astronomy)

The screenshot shows the 'Sun' section of the Time and Date website. A search box contains 'Boston' and a 'Go' button. A callout box with a '1' points to the search box. Below the search box, the results are displayed: Sunrise Today: 06:18, Sunset Today: 19:04. A callout box with a '2' points to the sunrise and sunset times. The page also shows a moon phase indicator (98.3%) and a map of the United States.

1. Type in your location
2. Get the sunrise and sunset time

### 12 Set Date and Time



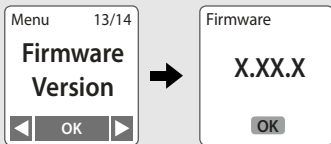
Set the correct date and time for your cameras location.

1. The number with the red background is the number you are setting. Press - ( <MENU > ) for a lower number or + ( TIME > ) for a higher number. Press **OK** : Next to confirm and go to the next number.


**ST:** Standard time

**DT:** Daylight Saving time

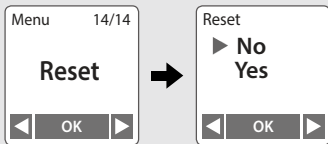
2. When finished press **OK** to exit and return to the set up screen.

**13** FW version


Displays the current version of firmware installed on the camera.

1. Displays the current version of firmware.
2. Press  to exit.

### 14 Reset



You can reset your camera back to the factory default settings.


1. Select Reset.
2. Select Yes and press  to reset your camera.



Function	Setting
Capture Mode	Motion Mode
Overwrite	On
Timer	Off
Playback Rate	20 FPS
Image Quality	Good
Time Stamp	On
LED Display	On
Band Filter	None
NightVision	Off

# What Size SD Card Should I Use

SD card size	Frame
4 GB SD Card	30,000
8 GB SD Card	60,000
16 GB SD Card	120,000
32 GB SD Card	240,000

 Base on image quality setting of "Good"

# Battery Life

Capture interval	Frames captured to low battery	Days
ASAP	1,845,000	7
1 sec	1,537,500	18
2 sec	1,476,000	34
5 sec	1,317,800	76
10 sec	1,118,000	129
30 sec	696,200	242
1 min	444,570	309
5 min	114,240	397
10 min	59,230	411
1 H	10,185	424
4 H	2,558	426
24 H	427	427

## Motion mode & Hybrid mode

- Stand by time: 427 days
- Frames captured to low battery: 1,845,000 frames

# Specification

Camera	
Model	MAC200 DN
LCD Screen	1.44" TFT LCD
Waterproof	IPX4
Capture Mode	
Motion Activated	PIR motion detection
Time Lapse	Fixed Capture Rate
Hybrid	Combine Time Lapse and Motion Activated mode
PIR Sensor	
Detect distance	6M
Detect Angle	100°
Image Sensor	
Type	1/4" CMOS sensor
Resolution	1.3 Mega pixel
Pixel size	2.8 $\mu$ m
Sensitivity	2500mV/lux-sec (Good low light quality)
Optics Lens	
Aperture	F2.0
Field of View	70°

<b>Optics Lens</b>	
Focal Length	28 mm (35mm equivalent)
Focus Distance	60 cm (Minimum)
<b>Recording</b>	
Video	Fast Playback Time Lapse Video
Format	AVI
	720P(1280x720)
Memory Storage	SD Card ( Supported up to 32GB)
<b>Power</b>	
Power source	2 x D cell Batteries
Battery Life	14 months*
External Power	DC IN: 5V
<b>Dimension</b>	
Size(DxWxH)	106x110x78 mm (4.13"x4.29"x3.04")
Weight	275g (without batteries)
Color	Black
<b>Operation Temperature</b>	
	- 20°C ~ 50°C - 4°F ~ 122°F

1. Batteries last 14 months usage under time lapse mode.  
(time interval setting: 5 minutes.)





