

# The Mega-Pixel Digital Still Camera

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## Introduction

The market of digital still cameras has been increasing rapidly in recent years as Image-capturing tools closely corresponding to the developments of the personal computer in the multi media world.

Many kinds of digital still cameras have been proposed for the market. They seem to be compact and cheap but lack the picture quality compared with conventional silver halide film cameras, owing to the image sensors adopted.

The authors have newly developed the compact digital still camera adopted mega-pixel CCD (Charge Coupled Device) imaging sensor.

The outlines and features of the camera are described.

## Outlines of the Camera

The main specifications and the appearance of the camera MX-700 are listed and shown in Table 1 and Figure 1, respectively.

Mega(1.5M)-Pixel CCD imaging sensor are adopted for MX-700, and the size of camera is 3.1x3.9x1.2 (inches : WxHxD). The size is smaller and the image-quality is much far better compared with other digital still cameras adopted VGA-size CCD image sensors.

## Features

Main features of the camera are described

### Techniques and Devices for High Image Quality

- 1.5M CCD image sensor  
1.5 million pixels primary-color CCD gives high-quality, high-resolution(1280 × 1024 pixels)images. A high-quality still image is enabled to adopt mechanical shutter because this CCD is IT method.
- High resolution Fujinon lens  
To make the most of the MX-700's potential, the super-megapixel CCD is matched with the outstanding clarity and contrast of its Fujinon lens—an ultrahigh-resolution design hailed for its performance in professional broadcast cameras.
- Custom-made analogue/digital signal processing LSI  
Analogue front end IC, digital signal processing LSI(HCSP) of its own development, and two high-speed RISC CPU with built-in DRAM are adopted in signal processing LSI. The miniaturization of the circuit was achieved by high accumulation with IC.
- Automatic control technique

To adopt advanced "TTL AE into 64 division" in Auto Exposure, to do the best exposure control in all the taking a picture scenes.

**Table 1 : The main specifications of MX-700**

CCD sensor	1/2-inch CCD with 1.5 million Square Pixels
Resolution	1,280×1,024 / 640×480 pixels
File format	JPEG(Exif) with 3 kinds of compression ratios
Storage media	Smart Media Card (3.3v / 5v, 2×8MB)
Number of images	11(Fine) / 22(Normal) / 44(Basic) at MG-8S
Lens focal length	Equivalent to 35 mm on a 35 mm camera
Macro shooting	Business card-size at 9cm / 3.5 in.
Aperture	2 steps (F3.2 / 8)
Autofocus system	CCD AF
Sensitivity	Equivalent to ISO 100
Exposure control	Programmed AE
White balance	5500k fix / Manual (4 modes)
Shutter Speeds	1/4 - 1/1,000 sec.
Viewfinders	Optical viewfinder / TFT color LCD monitor
Flash	Built-in Auto Flash with a range of approx. 2.5m / 8.2ft.
LCD monitor	2-inch LCD monitor made of low temperature polysilicon
Digital interface	RS-232C
Video output	NTSC / PAL
Power source	Rechargeable lithium-ion battery
Dimensions	80(w) × 101(H) × 32(D)mm / 3.1(w) × 3.9(H) × 1.2(D)in.
Weight	245g / 8.6oz.(excluding battery)

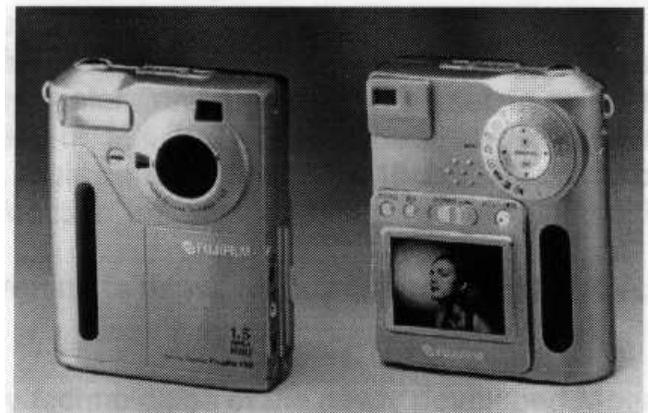


Figure 1. The appearance of MX-700

**Easiness to Handling**

- Design and external appearance  
The aluminum alloy was adopted in the body, and high-grade quality and lightening were achieved. Compact and light-weight, it weighs only 295g/10.4oz. (including battery), so it's easy to take along.
- Battery and low-power consumption  
Because the Li-ion battery does not have the effect of the memory, it is possible to add and to charge. It is possible to concentrate on taking a picture without the worry of the battery cutting because taking a picture more than about 250 shots (with LCD off) is possible with full charged.
- Recording media  
With images recorded on an ultra-compact Smart Media Card, you never have to worry about running out of storage capacity. It also makes it easy to transfer data to your computer with the optional PC Card Adapter PC-AD / PC-AD2 or the optional Floppy Disk Adapter FD-A1. And importing the files to popular image

processing applications is trouble-free since the format follows the widely used JPEG(Exif) standard.

- Custom setting function and other additional functions  
In MX-700, the function that the user uses well can be set in select key. Concretely, quality, color, and file size can be set in select key. The various function of MX-700 you can choose when shooting includes preview, ×2 electrical zoom, multi consecutive shots (16 shots/2 second or 16shots/4second). And play back function includes 4 times zooming, multi picture viewing, slide show like viewing, converting to sepia, smoothing, resizing to VGA, and copying.

**Conclusion**

The outlines and key technologies of the newly developed Mega-Pixel digital still camera MX-700 are described.

The authors expect that MX-700 will break up the new region and applications of the digital still cameras. The authors would like to express their sincere thanks to Mr.Iijima and Mr.Maeda for encouragement.