

DIGITAL STILL CAMERA DXM1200 for Microscope

Hardware Instruction Manual

Preface



Thank you very much for choosing Nikon.

This instruction manual presents the system configuration of the DXM1200 (digital still camera for microscope) and explains how to attach the DXM1200 to your microscope and connect it to your PC. This manual also includes safety precautions you must observe to ensure safe operation. Be sure to read this manual for correct and safe operation of your DXM1200.

For information on how to install the ACT-1 (DXM1200 application program) on your PC and use it, see the software instruction manual.

- No part of this manual may be reproduced without Nikon's permission.
- The content of this manual is subject to change without notice.
- Nikon has carefully prepared this manual. However, we make no expressed or implied warranty of any kind and assume no responsibility for such errors or omissions.
- Be sure to read the instruction manuals for the microscope and PC you plan to use with the DXM1200.

Safety Precautions

Your Nikon DXM1200 was designed with safety foremost in mind. However, improper use or failure to observe instructions may result in personal injury or property damage. Before attempting to operate your DXM1200, read this manual thoroughly and become familiar with proper operation procedures. Keep this and related instruction manuals at hand for quick reference.

Warning and Caution Symbols Used in This Manual

This instruction manual uses the following symbols to warn of potential hazards. Pay special attention to all instructions having either of these symbols.



Disregarding instructions marked with this symbol may lead to death or serious injury.



Disregarding instructions marked with this symbol may lead to injury or property damage.



1. Application of the DXM1200

Your DXM1200 was designed to capture and digitally process optical microscope images. Do not use it for any other purpose.

2. Do not disassemble the DXM1200.

To prevent malfunction and electric shock, never disassemble any part of the DXM1200 unless you are explicitly directed to do so in this manual. Contact your distributor should you determine that the DXM1200 does not function properly.

3. Check the power source.

The DXM1200 is powered by your PC. Make sure that your PC meets relevant safety standards. Read your PC instruction manual.

Applicable safety standards:

- Areas serviced by 120 VAC line: Underwriter's Laboratories (UL)
- Areas serviced by 220 to 240 VAC line: TÜV, GS, etc.

4. Water or foreign objects

To avoid malfunction and risk of fire, keep water, liquids, and foreign objects well away from and out of your DXM1200. Should the DXM1200 be splashed with water or foreign objects find their way into the DXM1200, immediately shut down the PC, remove the power plug from the receptacle, and contact your distributor. Do not use the DXM1200 in this condition.

5. Cable care

For continued protection against fire, avoid rough handling of the cable. Do not twist it or bend it acutely.



1. Installation location

The DXM1200 is a precision optical instrument. Failure to use or store it properly can result in malfunction or inaccuracy. Consider the following when choosing an installation location:

- Avoid bright room lighting and direct sunlight. Bright ambient light makes it difficult to obtain clear images from the microscope.
- Avoid dusty locations.
- Avoid subjecting the product to vibration. The surface must be level. The DXM1200 is extremely sensitive to vibration. Vibrations during image capture may result in images of poor quality.
- Avoid high temperatures and humidity. Mildew or condensation on the lens will result in deteriorated performance or malfunction.

2. Shutting down the PC

Before assembling the DXM1200 system, connecting the cable or disconnecting it, be sure to shut down your PC to prevent malfunction.

3. Connectors

To prevent malfunction and accident, connect only specified equipment to the connectors provided on the camera and the interface board.

4. Precautions on assembly, installation, and storage

- Watch your fingers or hands. They may be pinched when installing the DXM1200.
- To prevent malfunction, exercise caution when handling the DXM1200. Never apply shock or vibration to it.
- If you do not intend to use it for extended periods, remove the interface cable from the camera connector and the interface board connector. Be sure to shut down your PC before removing the interface cable.

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1

System Configuration

See Chapter 2, Assembly, for instructions on assembling the DXM1200 system.

- Camera
- Interface board
- Interface cable
- Cable clamping parts

Nylon clamp, clamping screw, adapter screw

- PC

Recommended Operating Environment

CPU:	Pentium III 500 MHz or faster
RAM:	256 MB or greater memory space required
Hard disk:	100 MB or greater memory space required
Mother board:	PCI expansion slot space required
VRAM:	16 MB or greater memory space required
OS:	Windows® 98/Windows® NT (Japanese/English ver.)
Display monitor:	1,024 dots x 768 lines or greater, 16.7 million or more colors must be reproduced.
Interface:	Only dedicated interface board can be used

Note: Some PCs might not work in this environment. If this happens, please consult Nikon or its local representatives.

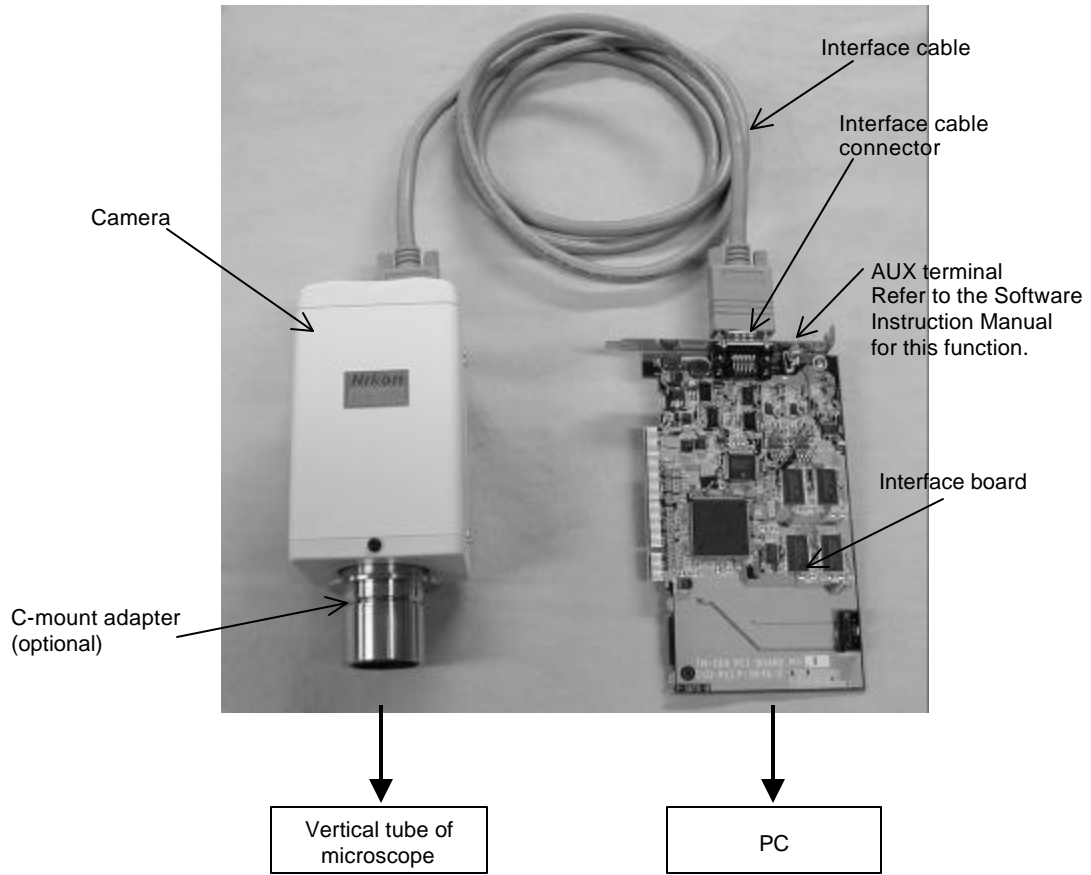
- Microscope
- C-mount adapter (optional)

The following C-mount adapters are available from Nikon.

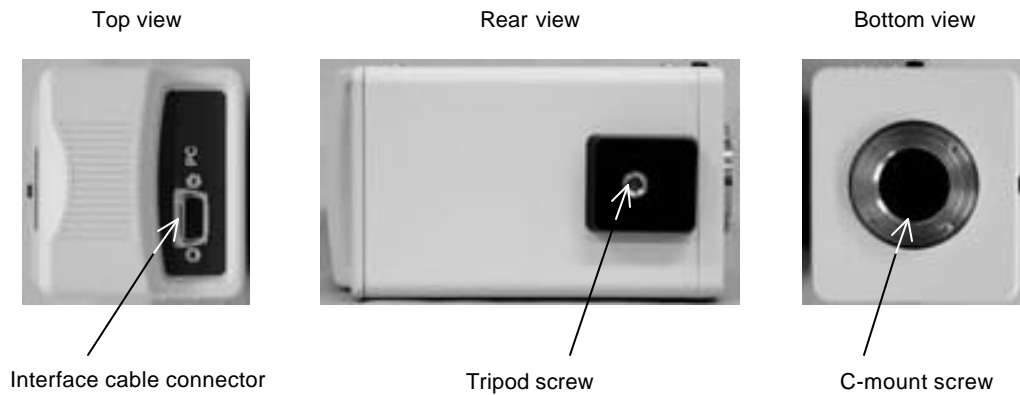
- C-mount direct TV adapter
- 1X relay lens for ECLIPSE series + C-mount TV adapter
- C-mount TV adapter 0.6X
- C-0.63X DXM relay lens

(If your microscope is not manufactured by Nikon, please consult the dealer from which you have purchased the microscope.)

Overall Configuration



Camera



2

Assembling

Before starting to assemble the DXM1200 system, read and observe the “Safety Precautions” provided earlier in this manual.

[Installation locations]

- Avoid bright room lighting and direct sunlight. Bright ambient light makes it difficult to obtain clear images from the microscope.
- Avoid dusty locations.
- Avoid subjecting the product to vibration. The surface must be level. The DXM1200 is extremely sensitive to vibration. Vibrations during image capture may result in images of poor quality.
- Avoid high temperatures and humidity. Mildew or condensation on the lens will result in deteriorated performance or malfunction.

[Required tools]

Screwdriver, allen wrench (supplied with the microscope)

1

Mounting the interface board in the PC



Warning

Remove the power cable from the power connector on the PC before mounting the interface board.

1. **Read your PC instruction manual** before mounting the interface board.
2. Remove and save the screws from the PCI slot. You will be using these screws later to secure the interface board.
3. Remove the cover from the PCI slot. Keep the cover for later use.
4. Carefully insert the interface board into the PCI slot. Avoid touching the motherboard and other components. Make sure the board is fully inserted.
5. Use screws removed from the cover to secure the interface board. The board may move when you tighten the screws, so hold the board level as you tighten them.
6. Fully insert the power cable into the power connector on the PC.

2

Attaching the C-mount adapter to the camera

1. Remove the rubber cushion cap from the camera.
2. Check that the C-mount adapter is clean and free of dust.
3. Screw the adapter fully into the camera. Ensure the adapter bottoms on the end.

3 Attaching the camera to the microscope

1. Insert the vertical tube sleeve of the C-mount adapter into the vertical tube on the microscope.
2. Use clamping screws to secure the sleeve and the tube.

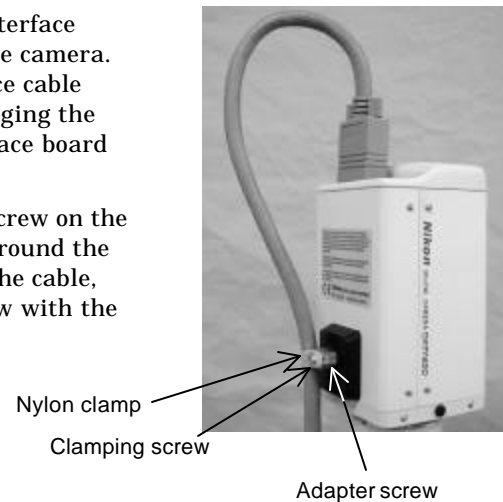
4 Connecting the camera and the PC with the interface cable



Caution

Be sure to shut down the PC before starting this task.

1. Use the interface cable to connect the interface board connector and the connector on the camera. Carefully check the shape of the interface cable terminal to make sure that you are plugging the cable into the correct board. The interface board connector is marked "CAMERA."
2. Attach the adapter screw to the tripod screw on the camera. Then, wind the nylon clamp around the interface cable, leaving a little slack in the cable, and secure the cable to the adapter screw with the clamping screw.



5 Turning ON the PC power

Turn ON the power to your PC. When you start Windows for the first time after the interface board has been attached, "Windows has found new hardware, and is locating the software for it." appears. At this time, insert installation disk #1 into the floppy disk drive and follow the on-screen instructions to install the interface board driver.

Supplementary information

The camera is powered by the PC via the interface board.

6 Installing the application program

See the DIGITAL STILL CAMERA DXM1200 for Microscope — Software Instruction Manual for more information.

3

Maintenance

Cleaning the lenses

Make sure that all lenses are clean and free from dust and fingerprints. A dirty lens filter can make it difficult to obtain clear images. If you find that lenses are dirty, follow the procedure below to clean them.

- Use a soft brush or blower to remove dust.
- If the lens is fingerprinted, dampen a soft and clean cotton cloth, lens tissue, or gauze with absolute alcohol (methyl or ethyl alcohol) and wipe the lens surface.
- Absolute alcohol and benzene are highly volatile and must be handled carefully. Keep sources of fire or flame well away while using them. Do not operate the power switch while handling them.

Cleaning painted sections

Never use solvents such as alcohol, ether, or paint thinner to clean painted, plastic, or printed areas. These solvents will damage or discolor finished and painted surfaces and erase panel markings. Nikon recommends silicone-based cleaners for cleaning.

Storage

- Shut down your PC if you do not intend to use the DXM1200 for a while.
- If you do not plan to use the DXM1200 for an extended period, remove the interface cable from the camera connector and the interface board connector. Be sure to shut down your PC before removing the interface cable.
- Store the DXM1200 in a dry, mildew-free place.
- Cover the DXM1200 to protect it against dust.

Regular inspection

To ensure a constant high level of performance, we recommend that you have the DXM1200 inspected on a regular basis. Ask your distributor about a regular inspection contract.

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Electrical Specifications

Electrical specifications

Input ratings	Camera: 12 VDC \pm 10% (powered through the PCI bus on the PC)
	Interface board: 5 VDC \pm 10% (powered through the PCI bus on the PC)
Protection class:	Class III
Operating environment	Temperature: 0°C to 40°C
	Humidity: 85%RH max (non-condensing)
	Altitude: 2000 m max.
	Pollution: Degree 2
Storage environment	Temperature: -10°C to 60°C
	Humidity: 90%RH max (non-condensing)
Applicable standards	Conforms to the EU Low-Voltage Directive. Meets the EU EMC Directive. Conforms to UL standards. Meets FCC 15B Class A.

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class A digital apparatus meets all requirements of the Canadian Interference—Causing Equipment Regulations.

Cet appareil numérique de la Classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

External Dimensions

Camera:	Approx. 78 W x 136 H x 69 D mm
Interface cable:	Approx. 2 m

Weight

Camera:	Approx. 800 g
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