

Nikon

IC Inspection Wafer Loaders
NWVL860/641
Series



The perfect answer to macro inspection tasks

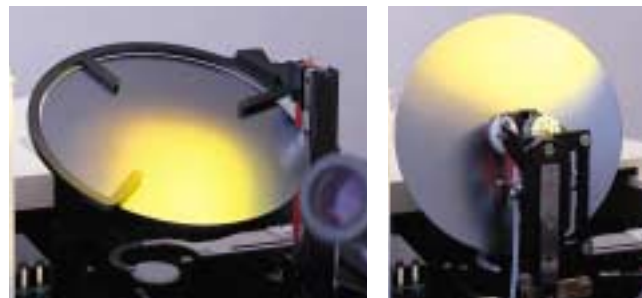
The NWL-860 series provides a full range of macro inspection capabilities—one of the features considered most essential for inspecting semiconductor patterns with progressively higher steps and ever-increasing layers.

A single cassette wafer loader capable of handling 8- and 6-inch (200 and 150 mm) wafers, this series of wafer loaders not only comes standard with pattern side macro inspection capability, but also with the ability to perform back side periphery and center macro inspections as well.

The NWL-860TMB SP comes in a stainless-steel body and generates no static electricity, preventing particulate from attaching to the wafers. The NWL-860TMB INX comes with an SMIF elevator and both models feature a stop switch for greater safeguards against abnormalities. MB-type models are also available exclusively for macro inspections.

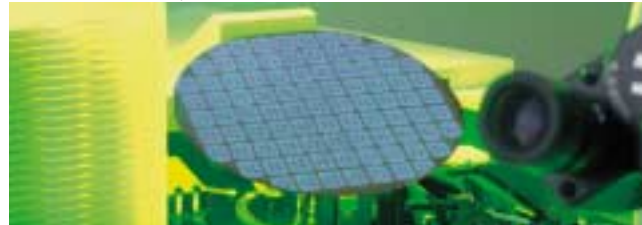
Back side macro inspection

Besides pattern side macro inspection, the NWL-860 series can perform back side periphery and center macro inspections. Macro inspection parameters, such as wafer rotation speed and tilt angle, can be set automatically or manually. Use the macro setting knobs to preset initial settings and make later adjustments using the joystick. (Joystick adjustments not possible during back side center macro inspections)



Back side center inspection

Back side periphery inspection



Pattern side macro inspection

Non-contact pre-alignment function

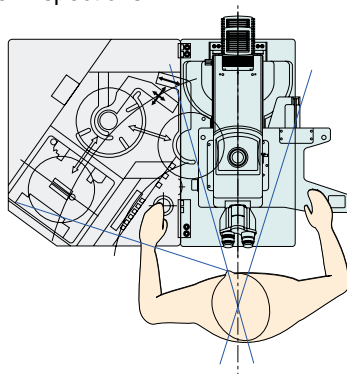
Prevention of wafer contamination is a vital issue when inspecting semiconductors. To avoid any chance of contamination, the NWL-860 series employs non-contact pre-alignment using photoelectric sensors to center wafers, avoiding all contact during orientation flat/notch operations. Furthermore, the whole system is configured, so that the entire inspection process can be performed without disturbing the downflow air stream in the cleanroom.

High reliability

Should an error occur, an error message appears on the LCD panel with a wafer recovery feature. Even when the power is turned OFF, the vacuum chuck stays ON, and the wafer is automatically returned to the cassette when the power is switched ON again. For even greater safety, the SP and INX types both feature an emergency button.

Ergonomic design

To assure operation in a natural posture, ergonomics surround every aspect of this system's design. Operation keys and knobs are located at the front and close to the operator, so that operation requires a minimum movement of the hand or eye. The wafer cassette is set at the front and 35° to the left of the operator, enhancing cassette setting and streamlining visual wafer inspections.



Simple, easy operation

The NWL-860 series uses a dialog-type operating system with an LCD panel, in which display information is logically classified, allowing settings for each step to be made easily on a single screen. Sophisticated functions such as file management for cassettes and wafer samples further enhance operational ease. A dedicated input keypad for setting inspection processes and programming wafers to be checked is also available as an option.

High throughput

Not only is the speed of the elevator surprisingly fast, but the use of a non-contact centering mechanism makes it possible to perform alignment operations quickly and accurately. A multi-arm system also allows loading and unloading of wafers with the utmost precision, increasing the overall efficiency of transfer and wafer exchange operations. This dramatically decreases cycle times, providing levels of throughput never seen before in any other system.

Communication function (option)

A data communication function conforming to SEMI (SECS) standards can be added optionally, enabling transfer of inspection data via the RS-232C interface or by remote control. This proves handy when expanding the system or incorporating it into a total network.

NWL-860TMB

Macro inspections of 8- to 6-inch wafers



NWL-860TMB SP

Dust-free, stainless-steel body



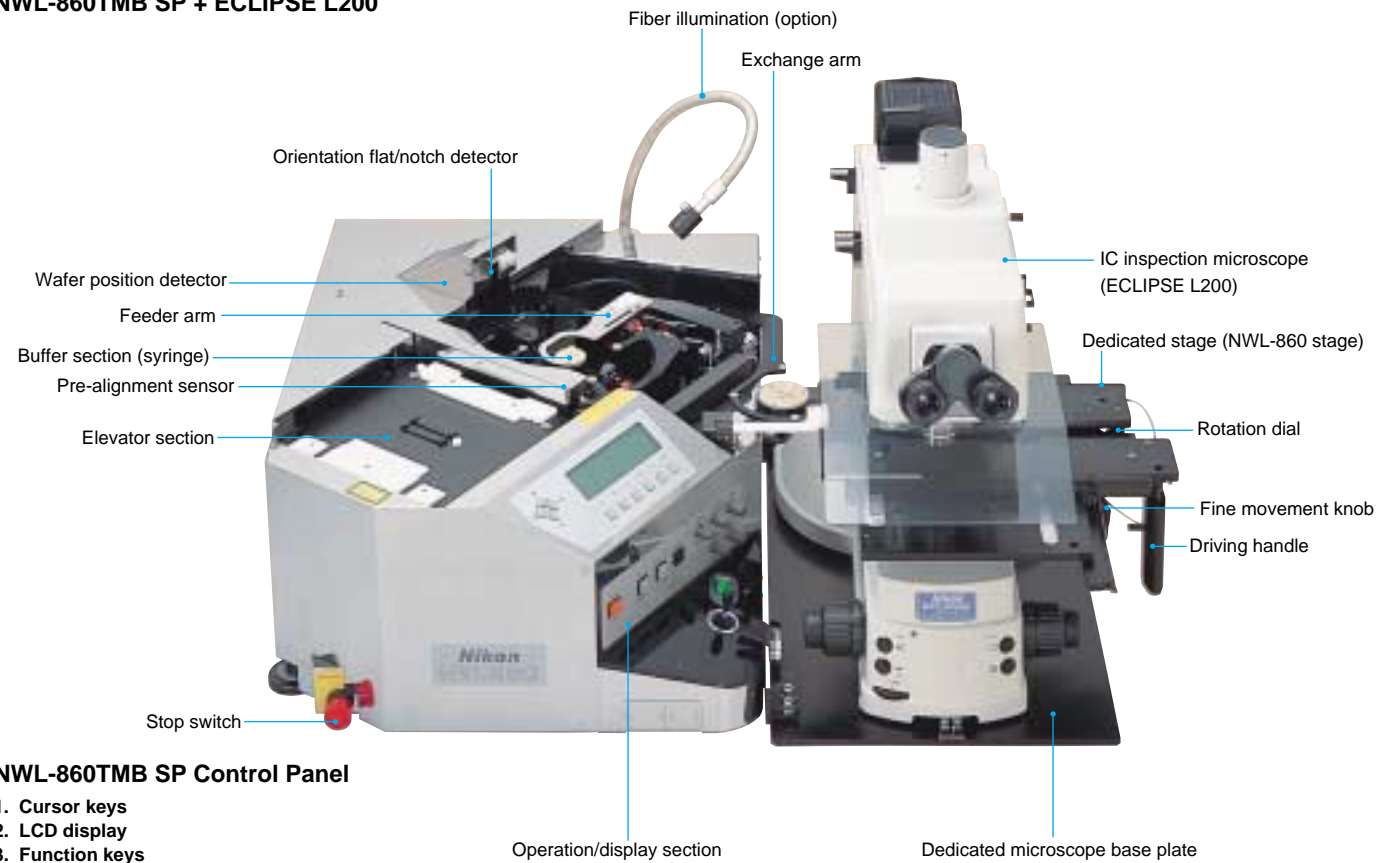
NWL-860TMB INX

SMIF elevator model



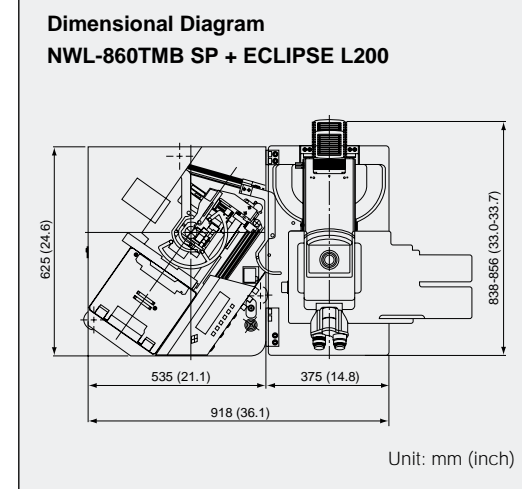
Nikon's IC inspection microscope and the NWL-860 series constitute a highly efficient IC external inspection system

NWL-860TMB SP + ECLIPSE L200

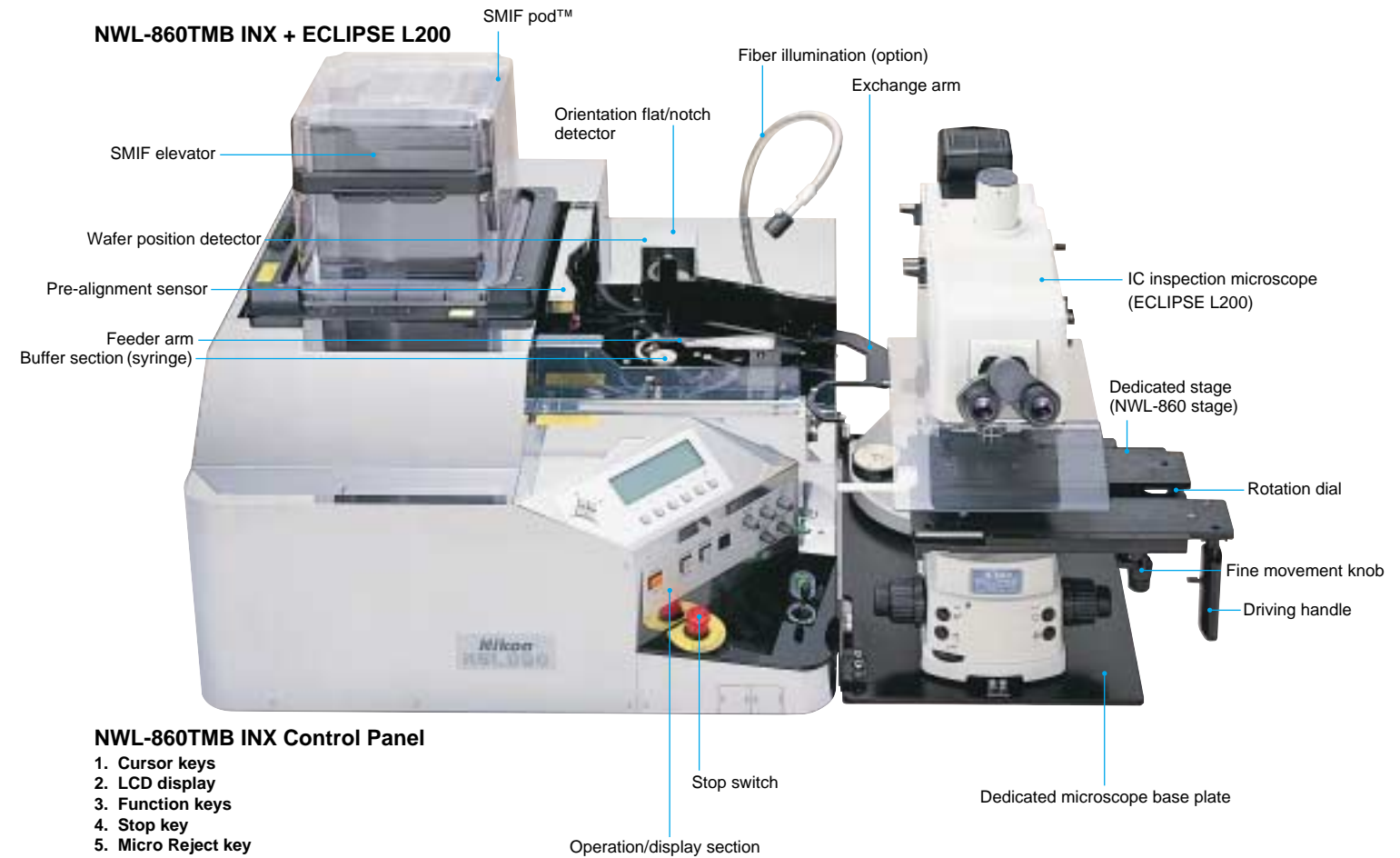


NWL-860TMB SP Control Panel

1. Cursor keys
2. LCD display
3. Function keys
4. Stop key
5. Micro Reject key
6. Macro Reject key
7. Manual key
8. Macro setting knobs
9. Pattern side macro inspection rotation speed
10. Pattern side macro inspection X tilt angle
11. Pattern side macro inspection Y tilt angle
12. Back side periphery inspection tilt angle
13. Back side center inspection rotation angle
14. Joystick
15. Start switch

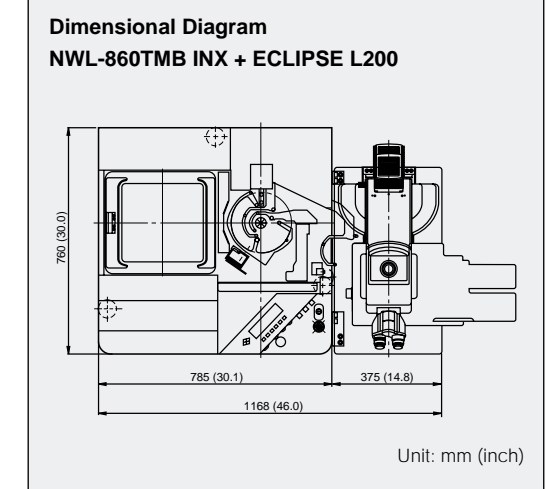


NWL-860TMB INX + ECLIPSE L200

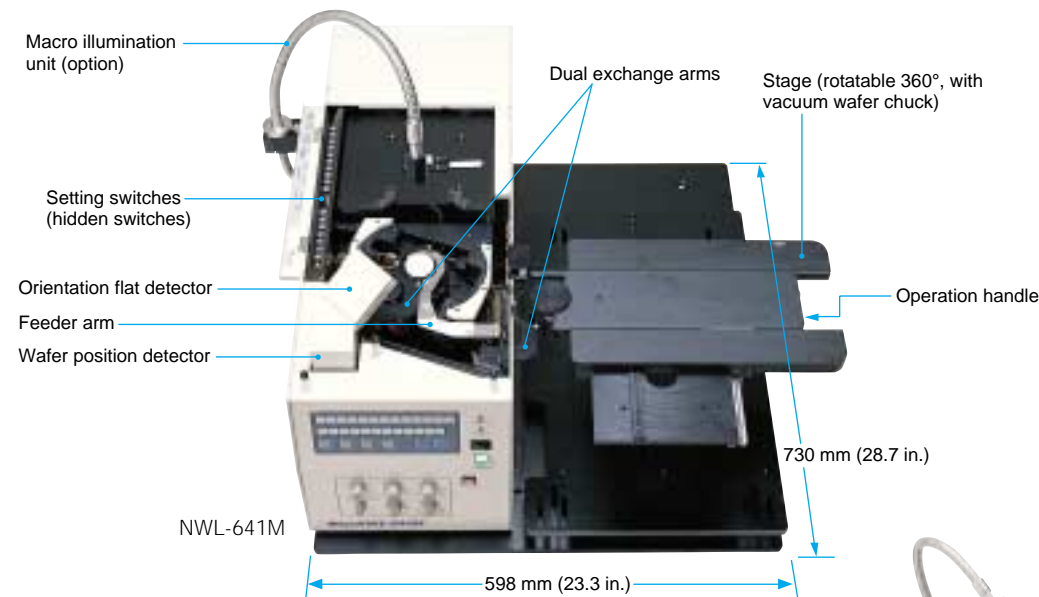


NWL-860TMB INX Control Panel

1. Cursor keys
2. LCD display
3. Function keys
4. Stop key
5. Micro Reject key
6. Macro Reject key
7. Manual key
8. Macro setting knobs
9. Pattern side macro inspection rotation speed
10. Pattern side macro inspection X tilt angle
11. Pattern side macro inspection Y tilt angle
12. Back side periphery inspection tilt angle
13. Back side center inspection rotation angle
14. Stop switch
15. Joystick
16. Start switch



For 6- to 4-inch Wafer Inspection



Simple, speedy wafer exchange

Operation is a breeze, thanks to the logical arrangement of keys on the control panel. The NWL-641 series can memorize up to 10 combinations of wafer channels to be inspected. The orientation flat detector allows the wafer direction to be set in four directions (0°, 90°, 180°, 270°) individually during wafer loading onto the microscope or during wafer unloading. Wafer exchange takes a short two seconds.

360° rotation vacuum wafer chuck

The vacuum wafer chuck on the stage draws and holds a wafer transferred by the loader, and if necessary, the wafer can be rotated 360° by using the syringe rotation knob, allowing the loaders to meet the varying needs of microscopic inspection.

Enhanced macro observations with unique fluttering mode (641M only)

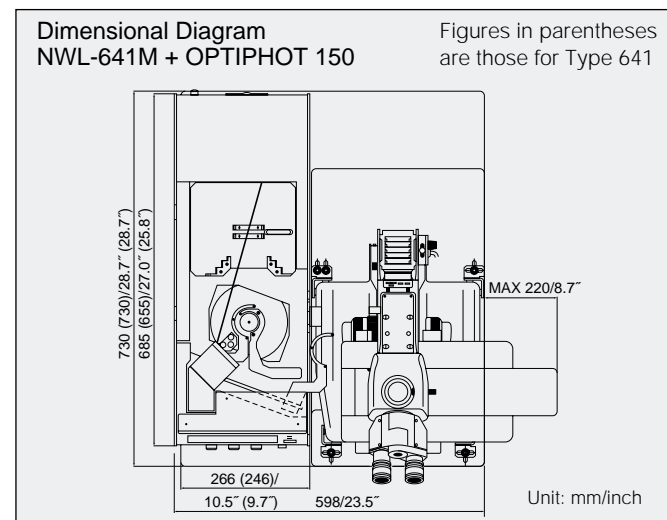
The 641M incorporates sophisticated macro observation movements, including Nikon's original fluttering mode, tilt macro rotation, and fluttering + tilt macro rotation.

Irregular-shaped wafer cassette capability

The loader in the NWL-641 series uses transmission-type laser wafer sensors. These sensors check the presence of wafers in the cassette, wafer tilt, as well as wafer deformation, to determine automatically the ideal position in which to take the wafers in and out, thus ensuring secure transfer.

Anti-contamination design

To significantly curtail dust generation from the equipment and the attachment of particles to wafers, Nikon adopted a special design, whereby the motor unit in the macro mechanism is located as far apart as possible from the wafer under inspection.



Quick Reference Chart

Models	Wafer size		Inspection mode				Stop switch	SMIF elevator	SECS2	Stainless steel body & peek chuck
	6-inch	8-inch	Micro	Macro	Back side macro (center)	Back side macro (periphery)				
NWL-860TMB	●	●	●	●	●	●				
NWL-860TM	●	●	●	●						
NWL-860T	●	●	●							
NWL-860MB*	●	●		●	●	●				
NWL-860TMB SP	●	●	●	●	●	●	●		Option	●
NWL-860TM SP*	●	●	●	●			●		Option	●
NWL-860T SP*	●	●	●				●		Option	●
NWL-860MB SP	●	●		●	●	●	●		Option	●
NWL-860TMB INX		●	●	●	●	●	●	●	●	●
NWL-860MB INX		●		●	●	●	●	●	●	●
NWL-860TMB INX* (6-inch only)	●		●	●	●	●	●	●	●	●
NWL-860MB INX* (6-inch only)	●			●	●	●	●	●	●	●
NWL-641	●		●							
NWL-641M	●		●	●						

Note: Models with asterisks are available on a special order basis.


Specifications

	NWL-860TMB/860TMB SP NWL-860TMB INX	NWL-860MB/860MB SP NWL-860MB INX	NWL-860TM/860TM SP	NWL-860T/860T SP
Wafer size	8 to 6 inches (conforms to both SEMI and JEIDA)			
Wafer cassette	Fluoroware® PA182-60MB, Fluoroware® PA192-80M			
Number of wafers	25 wafers (6-inch), 25 or 26 wafers (8-inch)			
Inspection mode	1. Micro inspection 2. Tilt macro inspection 3. Back side center macro inspection 4. Back side periphery macro inspection	1. Tilt macro inspection 2. Back side center macro inspection 3. Back side periphery macro inspection	1. Micro inspection 2. Tilt macro inspection	1. Micro inspection
Wafer transfer	Robotic transfer with vacuum chuck			
Pre-alignment	Non-contact pre-alignment			
Orientation flat/notch detection	By transmitted-type sensor Wafer angle before and after inspection can be specified in increments of 90° degrees			
Stage	Dedicated stage (rotatable 360°; with vacuum chuck)			
Compatible microscopes	Nikon OPTIPHOT 300/200C/150, ECLIPSE L200			
Dimensions (WxDxH) and weight (Approx.)	Main unit: 530 x 620 x 275 mm, 50 kg (INX type: 786 x 752 x 442 mm, 60 kg) Footprint (WxD): 900 x 620 mm (INX type: 1450 x 800 mm)			
Vacuum	Pressure: -600 mmHg (-80 kPa) or less, Displacement: 10 nl/min. or more			
Power source	AC 100V/120V, 220V/240V ±10%, 50/60 Hz, 3.5A max.			

	NWL-641	NWL-641M
Wafer size	6, 5 and 4 inches	
Wafer cassette	Fluoroware® H-BAR type housing	
Number of wafers	25 wafers	
Inspection mode	1. Micro inspection	1. Micro inspection 2. Tilt macro inspection
Wafer transfer	Robotic transfer with vacuum chuck	
Orientation flat/notch detection	By transmitted-type sensor Wafer angle before and after inspection can be specified in increments of 90° degrees	
Stage	Dedicated stage (rotatable 360°; with vacuum chuck)	
Compatible microscopes	Nikon OPTIPHOT 300/200C/150, ECLIPSE L200	
Dimensions (WxDxH) and weight (Approx.)	246 x 655 x 245 mm, 21 kg	266 x 655 x 245 mm, 23.5 kg
Vacuum	Pressure: -600 mmHg (-80 kPa) or less, Displacement: 10 nl/min. or more	
Power source	AC 100V/120V ±10%, 50/60 Hz, 1.7A max. AC 220V/240V ±10%, 50/60 Hz, 0.85A max.	

Note: Class 1 laser equipment

*All models listed here are UL/CE approved.

	WARNING	TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING YOUR EQUIPMENT.
---	----------------	--

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. September 2000.

©2000 NIKON CORPORATION

NIKON CORPORATION

9-16, Ohi 3-chome, Shinagawa-ku, Tokyo 140-8505, Japan
Phone: +81-3-3773-8122 Fax: +81-3-3773-8115
<http://www.nikon.com/>
<http://www.nikon.co.jp/inst/>

NIKON CANADA INC.

CANADA Phone: +1-905-625-9910 Fax: +1-905-625-0103

NIKON FRANCE S.A.

FRANCE Phone: +33-1-45-16-45-16 Fax: +33-1-45-16-00-33

NIKON GmbH

GERMANY Phone: +49-211-9414-0 Fax: +49-211-9414-322

NIKON INSTRUMENTS S.p.A.

ITALY Phone: +39-55-3009601 Fax: +39-55-300993

Printed in Japan (0009-10)T

NIKON EUROPE B.V.

P.O. Box 222, 1170 AE Badhoevedorp, The Netherlands
Phone: +31-20-44-96-222 Fax: +31-20-44-96-298

NIKON SINGAPORE PTE LTD

SINGAPORE Phone: +65-2978123 Fax: +65-2978131

NIKON AG

SWITZERLAND Phone: +41-1-913-62 00 Fax: +41-1-910-37 44

NIKON UK LTD.

UNITED KINGDOM Phone: +44-181-541-4440 Fax: +44-181-541-4584



ISO 9001 Certified
NIKON CORPORATION
Instruments Company



ISO 14001 Certified
NIKON CORPORATION
Yokohama Plant

NIKON INSTRUMENTS INC.

1300 Walt Whitman Road, Melville, N.Y. 11747-3064, U.S.A.
Phone: +1-631-547-8500 Fax: +1-631-547-0306

Code No. 2CE-KXTH-3

This brochure is printed on recycled paper made from 40% used material.

