

# NucleoCounter<sup>®</sup> NC-250<sup>™</sup>

## Instrument User Guide

Product No. 991-0251

Revision 1.7

07feb2023



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## Caution!

This equipment must be operated as described in this user guide and documents referred to herein. Please read the entire guide and referred documents before attempting to use this unit. Gloves or protective clothing are not worn in the images shown in this document, however, ChemoMetec A/S recommends that the user wear suitable protective clothing or equipment.

## Contacting support

Technical information including product literature, answers to questions regarding the operation of the NucleoCounter® NC-250™ not covered in this document and referred documents is available through the following:

- E-mail questions to [support@chemometec.com](mailto:support@chemometec.com) Check out the FAQ section under support at [www.chemometec.com](http://www.chemometec.com)
- To speak with a Technical Support Specialist, call (+45) 48 13 10 20

Please have the NucleoCounter® NC-250™ serial number available when contacting ChemoMetec for support. The NucleoCounter® NC-250™ serial number is found on the label affixed to the rear of the instrument. The version number of the NucleoView™ NC-250™ software shall also be noted, this can be found on the Help – About menu item in the NucleoView™ NC-250™ software.

## Sales and ordering information

For sales assistance on NucleoCounter® NC-250™ or NucleoView™ NC-250™ software, to place an order for a NucleoCounter® NC-250™ or consumables, call (+45) 48 13 10 20, fax (+45) 48 13 10 21, or send an e-mail [sales@chemometec.com](mailto:sales@chemometec.com).

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## Declaration of Conformity (CE) - *EXAMPLE*

*Name of product:* NucleoCounter® NC-250™  
*Type:* Flexible Cell Counter  
*Other identifying data:* Product number 900-0251

We declare under our sole responsibility that the products, to which this declaration relates, are in conformity with the Council Directives on the approximation of the laws of the EEC Member States relating to the following:

Directives    Electromagnetic Compatibility (EMC) Directive 2014/30/EU  
                 Restriction of the use of certain hazardous substances (RoHS) Directive 2011/65/EU  
                 Low Voltage Directive (LVD) 2014/35/EU  
                 Machinery Directive (MD) 2006/42/EC

### Harmonized Standards

EMC:            EN 61326-1:2013 Electrical equipment for measurement, control, and laboratory use – EMC requirements – part 1: General requirements  
                 EN 61000-3-2:2014 Limits for harmonic current emissions  
                 EN 61000-3-3:2013 Limitation of voltage changes, voltage fluctuations and flicker

RoHS:           EN 63000:2018 Technical Documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

LVD:            EN 61010-1:2010+A1:2019 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements  
                 EN 61010-1-081 Particular requirements for automatic or semi-automatic laboratory equipment for analysis and other purposes

MD:             EN 12100:2010 Safety of machinery; risk assessment and risk reduction  
                 EN 13849-1:2015 Safety-related parts of control systems - Part 1: General principles for design

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:  
i) this device may not cause harmful interference; and ii) this device must accept any interference received, including interference that may cause undesired operation.

*Date & Signature will appear on the instrument's actual Declaration of Conformity statement, accompanying each new instrument order.*

Name and address of manufacturer:  
ChemoMetec A/S  
Gydevang 43  
DK-3450 Allerød  
DENMARK

Date: 2022-08-25

## Declaration of Conformity (UKCA) - *EXAMPLE*

*Name of product:* NucleoCounter® NC-250™  
*Type:* Flexible Cell Counter  
*Other identifying data:* Part no. 900-0251

We declare under our sole responsibility that the products, to which this declaration relates, are in conformity with the relevant legislation of United Kingdom:

**Regulations:** Electromagnetic Compatibility Regulations 2016  
The Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012  
The Electrical Equipment (Safety) Regulations 2016  
The Supply of Machinery (Safety) Regulations 2008

### Designated Standards

**EMC:** BS EN 61326-1:2013 Electrical equipment for measurement, control, and laboratory use – EMC requirements - General requirements  
BS EN 61000-3-2:2014 Limits for harmonic current emissions  
BS EN 61000-3-3:2013 Limitation of voltage changes, voltage fluctuations and flicker

**RoHS:** BS EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

**LV:** BS EN 61010-1:2010+A1:2019 Safety requirements for electrical equipment for measurement, control, and laboratory use – General requirements  
BS EN 61010-1-081 Particular requirements for automatic or semiautomatic laboratory equipment for analysis and other purposes

**MR:** BS EN 12100:2010 Safety of machinery; risk assessment and risk reduction  
BS EN ISO 13849-1:2015 Safety-related parts of control systems – General principles for design

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:  
i) this device may not cause harmful interference; and ii) this device must accept any interference received, including interference that may cause undesired operation.

*Date & Signature will appear on the instrument's actual Declaration of Conformity statement, accompanying each new instrument order.*

Name and address of manufacturer: Date: 2022-08-25  
ChemoMetec A/S  
Gydevang 43  
DK-3450 Allerød  
DENMARK

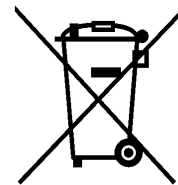
## WEEE directive information – Europe only

### **Correct Disposal of This Product (Waste Electrical & Electronic Equipment) - Europe only**

This marking shown on the product or its literature, indicates that it should not be disposed together with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

This information is listed in “Appendix B: WEEE directive information in more EU languages”.



## Introduction and intended use

The NucleoCounter® NC-250™ is a compact cell-analyzer intended to be used for advanced cell analysis within the life-science and pharmaceutical industries. The NucleoCounter® NC-250™ system is intended for research use only and not for diagnostic use. The NucleoCounter® NC-250™ uses NC-Slide A2™ (catalog no. 942-0001) and NC-Slide A8™ (catalog no. 942-0003) with two and eight chambers, respectively. **This covers an analysis volume from 0.8 µl to 16 µl.**

The NucleoCounter® NC-250™ is a highly advanced cell analyzer based on fluorescence microscopy using digital camera technology with low magnification and advanced image analysis. Numerous properties of the individual cells can be analyzed with the solid-state integrated triple-light sources (365 nm, 500 nm, and a white dark field light source) and a dual-band emission filter. Spatial position is maintained from wavelength to wavelength, enabling direct comparison of the different parameters detected or quantified on each individual cell. The low magnification (1.75×) guarantees a large analysis volume, ensuring high statistical performance.

Specially designed sample illumination eliminates the risk of bleaching adjacent sample material, meaning several images can be exposed in the same sample window. Since no tubes, valves, hoses etc. are present the instrument requires little maintenance.

The NucleoCounter® NC-250™ product number is 900-0251.

## Warnings and precautions

Whenever the  symbol appears on the NucleoCounter® NC-250™ instrument, it indicates that the manual must be consulted for precautions and warnings.

### Power and cables

Use the shielded USB cable supplied with the NucleoCounter® NC-250™ to ensure that appropriate EMI classification is maintained for the intended environment.

 The USB interface connector of the NucleoCounter® NC-250™ must only be connected to SELV circuits. External computing devices connected to the USB interface connector of the NucleoCounter® NC-250™ must comply with the standards UL 1950 and IEC/EN 60950.

**The NucleoCounter® USB interface connector**

| Pin no.         | Name                       | Maximum Voltage level <sup>1</sup> |
|-----------------|----------------------------|------------------------------------|
| 1               | +5V                        | +5 VDC                             |
| 2               | D-                         | +3.5 VDC                           |
| 3               | D+                         | +3.5 VDC                           |
| 4               | DGND                       | 0 VDC                              |
| Metal enclosure | Shield (connected to DGND) | 0 VDC                              |

NucleoCounter® NC-250™ is powered by an external 24VDC power supply. For safe use, follow the instructions for connecting the power supply.

 The NucleoCounter® NC-250™ must only be used with an external power supply purchased from ChemoMetec.

 The detachable DC power supply cord set and appliance inlet of the external power supply are considered as the disconnecting device.

 The mains supply cord and plug of the external power supply shall comply with any national regulations.

 The user should be made aware of that, if the NucleoCounter® NC-250™ and the external power supply is used in a manner not specified by the manufacturer, the

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<sup>1</sup> In normal operation mode (refers to Pin no. 4)



protection provided by the NucleoCounter® NC-250™ and the external power supply may be impaired.

## Electromagnetic interference

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

 Caution! Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Slides, reagents, solutions, and dispensers

With respect to use and handling of slides, reagents, solutions, and dispensers, please refer to appropriate package inserts for these items.

 Caution! To protect against accidental splashes when using a bottle-top dispenser for potentially hazardous liquids, protective clothing, eye protection and gloves must be worn.

## General precautions

Any biological specimen should be handled as if it is capable of transmitting infectious disease and disposed of with proper precautions according with federal, state and local regulations.

- Avoid specimen contact with skin or mucous membranes.
- Never pipette by mouth.
- Avoid cross contamination of the samples when preparing the samples. This can compromise the quality of results.

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# 1 Inspection, unpacking and installation of equipment

Upon receiving the order from ChemoMetec, the box or boxes should be carefully inspected for any damage that may have occurred during shipping. Any damage must be reported to the carrier and to ChemoMetec immediately.

Unpack the boxes, saving the packing materials for possible later use.

Verify that the ChemoMetec packing list received refers to the correct and ordered materials, and that nothing is missing.

If any part of the order was damaged during shipping, is missing or fails to operate, please contact ChemoMetec immediately.

## 1.1 Operation and installation of the NucleoCounter® NC-250™

The NucleoCounter® NC-250™ Installation Qualification (IQ) Application Note (# 994-0251) describes the IQ protocol. The NucleoCounter® NC-250™ Operational Qualification (OQ) Note (# 994-0252) describes the OQ protocol. Execution of the IQ protocol will ensure that the instrument is installed correctly. The OQ protocol verifies that the instrument is operating correctly.

Once IQ and OQ protocols are successfully completed, the NucleoCounter® NC-250™ is ready for use.

## 2 Cell analysis with NucleoCounter® NC-250™

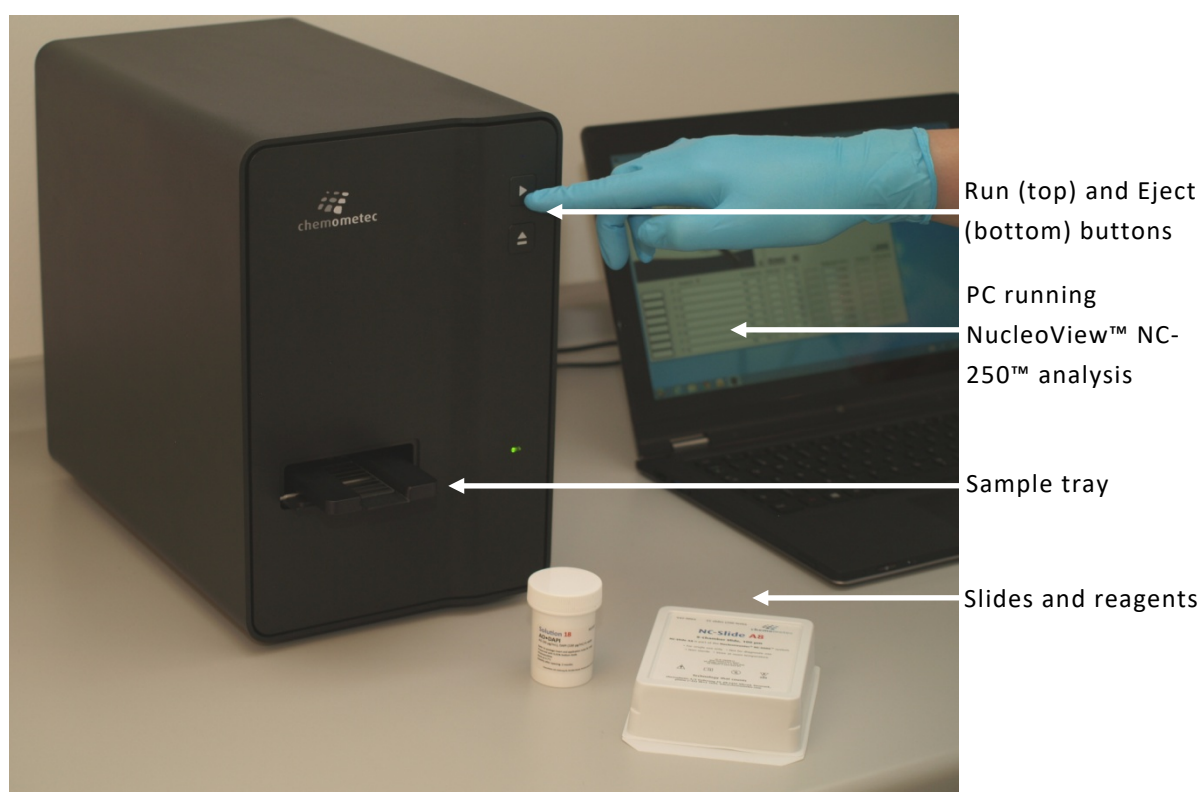
The NucleoCounter® NC-250™ is a bi-color fluorescent cell-analyzing instrument. The user requires only a short period of training on how to operate the instrument before running highly advanced cell analysis protocols. The instrument itself is calibration-free. Individual calibration parameters for each slide will be recorded and used by the instrument during analysis.

Suggested applications of NucleoCounter® NC-250™:

- Viability and Cell Count Assays.
- Cell Cycle Assays.
- Vitality Assay.

### 2.1 The NucleoCounter® NC-250™ instrument

The NucleoCounter® NC-250™ is shown in Figure 1, below.



**Figure 1. NucleoCounter® NC-250™**

### 2.1.1 Fluorescence microscope

The NucleoCounter® NC-250™ is a fluorescent microscope with a magnification of **approximately 1.75×**. It is equipped with three light sources and a dual-band emission filter.

Types of sample slides that fit into the sample tray:

- NC-Slide A2™ (catalog no. 942-0001)
- NC-Slide A8™ (catalog no. 942-0003)

Several different analyses can be run on the NucleoCounter® NC-250™. All of them are documented in application notes describing the protocol to be used for the analysis. The basis of all these protocols is to provide the operator with a set-up to perform an extremely advanced analysis in a very simple manner so that all users can be trained in a very short time.

The NucleoCounter® NC-250™ is operated by NucleoView™ 250™ software. Refer to the Help Menu in the NucleoView™ 250™ software or the “Install\_Guide” file on the supplied USB Flash drive for the list of PC Specifications.

### 2.1.2 Sample tray

The sample tray holds the slide during analysis. There is one optical window in the tray. Please ensure this window is always kept clean. Refer to section “7.1 Cleaning” for guidelines on how to clean the sample tray if required. The sample tray can be moved during analysis in both X and Y horizontal directions and hereby multiple images of the same sample can be exposed. This enables the NucleoCounter® NC-250™ to analyze a volume up to **16 µl from one sample**.

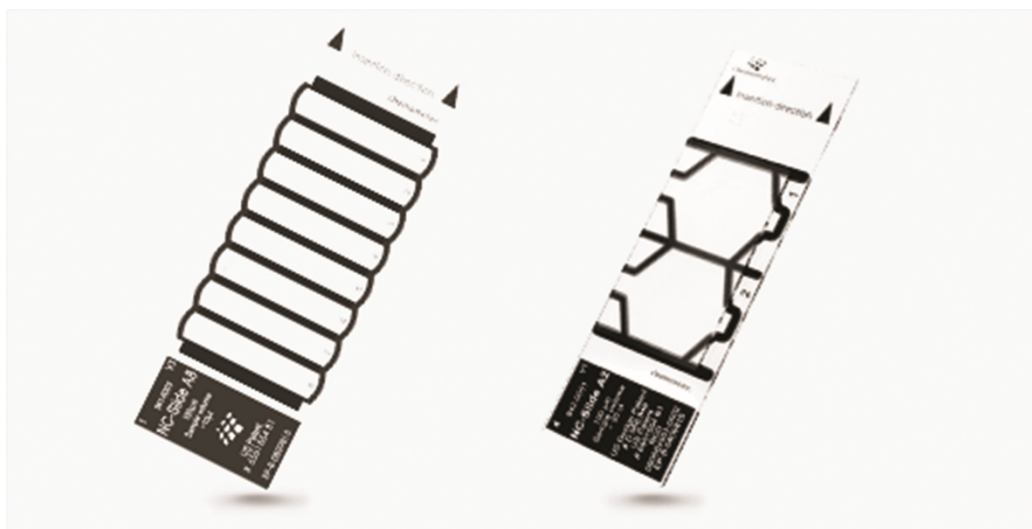
On the front of the NucleoCounter® NC-250™ there are two buttons. One is for insertion and ejection of the sample tray, the other is used to repeat the most recent type of analysis performed on the instrument. Thus, it is easy to perform several identical analyses in a routine manner.

At the rear of the instrument a USB data connection (rev 2.0), a DC Power Connection and a DC fuse holder can be found. Always keep these areas free of liquids and foreign objects.

## 2.2 Sample slides

Glass assay slides are available in two-chamber and eight-chamber versions (Figure 2). The maximum analysis volume per chamber is 16 µl for a two-chamber slide and 5.6 µl in an eight-chamber slide.

Use standard pipettes to load analytical samples onto the slide. After analysis, the slide must be handled as biological waste. In section “5.2 Inserting and removing the slide” see how to place and remove the slide from the sample tray.



**Figure 2. The NC-Slide A8™ (8-chamber slide) and NC-Slide A2™ (2-chamber slide). Note that arrows show the direction of loading the slide into the instrument**

## 3 Buttons, LED indicator and PC control

### 3.1 Interactive controls



**Figure 3. The front of the NucleoCounter® NC-250™**

Figure 3, above shows the front of the NucleoCounter® NC-250™. Three operational areas are present:

- The lid covering the sample tray.
- RUN and EJECT buttons.
- Tri-color status indicator.

The sample slide is placed in a sample tray covered by a lid. The sample tray will automatically open the lid when prompted. A spring will ensure that the lid closes again when the sample tray is inserted.

**⚠ Caution!** No parts or materials must be placed in front of the lid during operation.

Once a protocol has been selected in the software (see detailed description in the NucleoView NC-250™ Software User Guide), an analysis using this protocol can be performed pressing the Run key on the instrument or through the software.

The LED indicator shows the status of the instrument:

- Green - the NucleoCounter® NC-250™ is ready for next operation.
- Red - the NucleoCounter® NC-250™ is busy.
- Orange - the NucleoCounter® NC-250™ is not in connected to the NucleoView™ 250™ software.



## 4 Start-up

### 4.1 Power on, power off

At the rear of the instrument, there are two sockets and one fuse holder. When seen from the rear (Figure 4), the USB 2.0 port is to the left (Figure 5) and the fuse holder and DC power socket to the right (Figure 6). The NucleoCounter® NC-250™ is powered by a 24VDC external power supply. To power the NucleoCounter®, connect the DC power cable to the instrument, and connect the main power cable into a wall outlet.

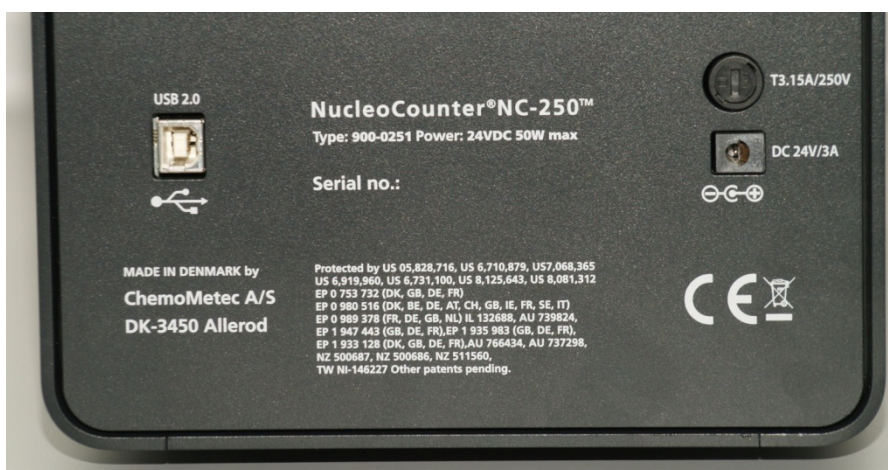


Figure 4. Rear side of the NucleoCounter® NC-250™

The NucleoCounter® NC-250™ is turned on once the wall power outlet is on. To power it off, either remove the DC power cable or turn the wall outlet off.



Figure 5. USB 2.0



Figure 6. DC power inlet

**4.1.1 Starting the instrument**

Once the NucleoView™ NC-250™ software is launched, the actuators of the instrument perform a homing procedure to assure correct positioning. After initialization, the status indicator on the front will turn green and the NucleoCounter® NC-250™ is ready for operation.

## 5 Operation of NucleoCounter® NC-250™

### 5.1 Ready mode

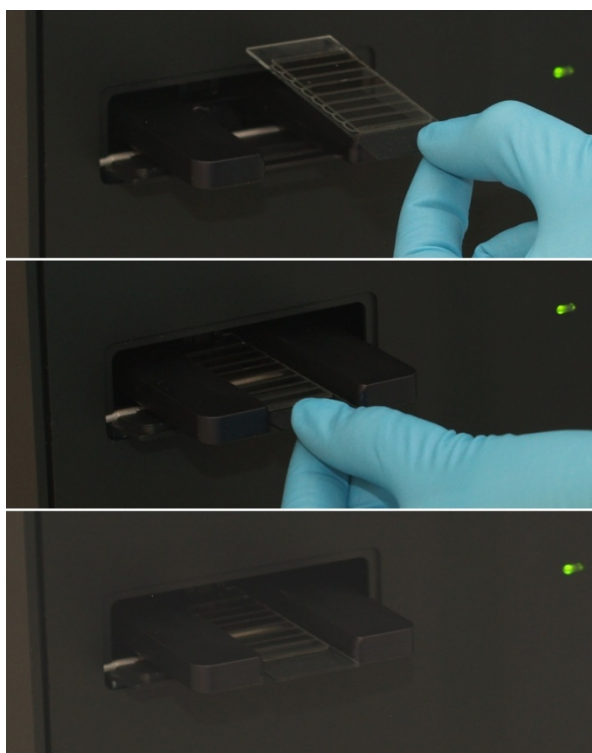
Once the NucleoCounter® NC-250™ and the NucleoView™ NC-250™ software are ready, analysis can begin. In the NucleoView™ interface, use the browse menu to select the protocol to be performed. Once selected, either press the RUN button on the front of the instrument (Figure 1) or click on the *Run* icon in the software to execute the analysis.

### 5.2 Inserting and removing the slide

To analyze a slide, carry out the following steps:

1. Eject the sample tray.
2. Hold the slide at the end opposite the arrows (the gripping area) (Figure 7).
3. Place the slide in the sample tray.
4. Select the correct protocol in NucleoView™ NC-250™.
5. Press the RUN button.

After analysis, remove the slide from the sample tray and dispose as biological waste according to national or regional laws or regulations, depending on the nature of its content.



**Figure 7. Illustration of how to hold and place the slide on the sample tray**

### 5.3 Presentation of results

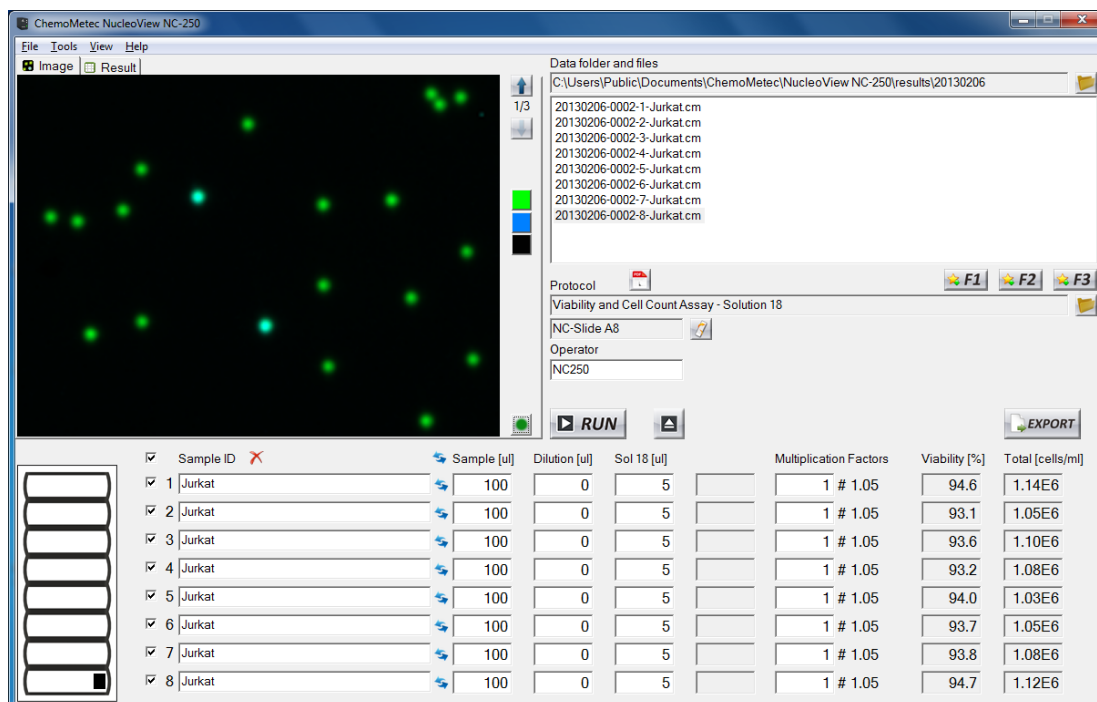
Depending on the type of analysis performed, results will be presented on the PC within a few seconds and the fluorescent image(s) will be stored on the hard disk. The typical process time is between 20 seconds to two minutes for multi-image and bi-color analysis.

### 5.4 Protection of the optical system

The lid covers the sample tray. This lid is designed to protect the area from dust and other potential contaminants, and to keep external light from interfering with recording of the fluorescence image. The lid is spring loaded so it will automatically close during insertion of the sample tray.

Unless inserting or ejecting a sample media or cleaning the sample tray, the lid should always be closed to protect the optical system of the NucleoCounter® NC-250™. After operation, shut down the NucleoView™ NC-250™ software first, so the lid closes in case the sample tray is left ejected. Next, turn off the NucleoCounter® NC-250™ by removing the DC power cable or disconnecting it from the wall outlet.

## 6 NucleoView™ NC-250™



**Figure 8. NucleoView™ NC-250™**

NucleoView™ NC-250™ software controls (Figure 8) the NucleoCounter® NC-250™ instrument and analyzes the images recorded.

NucleoView™ NC-250™ is located on a USB flash drive supplied with the instrument and contains the software, drivers, instrument specifications, the NucleoView™ NC-250™ user guide, etc. Run the file “Install\_Guide” to initiate the NucleoView™ NC-250™ user guide. Once the program is installed, you can also select the menu: Menu – Help – Software user guide.

## 7 Maintenance of NucleoCounter® NC-250™

### 7.1 Cleaning

#### 7.1.1 Instrument casing

Depending on the environment in which the NucleoCounter® NC-250™ is operated, we recommend carrying out regular cleaning of the outer surfaces. When cleaning the casing, use a soft moist cloth and gently wipe the surface. Any contamination, which does not come off immediately, should be rubbed gently with a cloth wetted with mild detergent. Never use organic solvents or aggressive detergents to clean the exterior of the NucleoCounter® NC-250™ as this might damage the surface. Daily cleaning of the casing can be performed by using a mild detergent.

#### 7.1.2 Sample tray

When cleaning the sample tray, great care must be taken against introducing any liquid or dust into the NucleoCounter® NC-250™. Any liquid that enters the interior of the NucleoCounter® NC-250™ can damage the optical parts and thus compromise the quality of the cell counts.

The black surface of the sample tray is anodized aluminum and can therefore be wiped off with a clean, dry, and dust-free cloth.

The sample tray and the optical parts inside the NucleoCounter® NC-250™ should be properly protected against dust and other contaminants. Take great care to ensure that the sample tray is inserted when the instrument is not in use. If the black surface of the sample tray becomes contaminated, clean immediately using a clean, dry, and dust-free cloth.

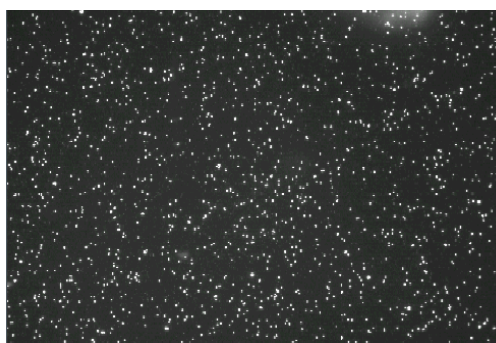
#### 7.1.3 Removing dust particles

There is an optical window in the sample tray. Please ensure that this is kept clean at all times. In case cleaning is needed, use the Cleaning kit NucleoCounter® (catalog no: 911-0013) and follow the instructions.



**Figure 9. Illustration of how to clean the optical window with a clean and dry Alpha Swab**

Figure 9 shows how to wipe the optical window. Place a clean Alpha swab on the inner part of the window, and then move it outwards. Repeat to cover the entire optical window. A foreign object on the optical window surface can affect data collection. Objects will normally be visible as a faint shape or flake in the image. In case the contamination is on the slide it will not be visible when analyzing a new slide. If the contamination is on the optical window, it will be present on every image taken at this view of the optical window<sup>2</sup>. If the contamination is present on every image taken no matter which view is used it is most likely that other optical parts are contaminated. In this case contact ChemoMetec support. Figure 10 shows an example of a contamination in the top right quarter.



**Figure 10. An image showing a contamination of the optical system, visible as a white cloudy phenomenon in the upper right-hand corner**

The presence of a contaminant (e.g. dust particles) will usually not influence cell counting results. The NucleoView™ NC-250™ algorithm will distinguish between cells and contaminants, since a cell is generally significantly smaller than contaminants.

#### **7.1.4 Liquid spill**

If liquid is spilled on the instrument it can contaminate elements of the optical system. This contamination can show up in the image in several ways and have many causes, but a common feature is that it cannot be removed using compressed air.

Although such phenomena are clearly visible on the image, they rarely affect the results of the analysis. Since it is possible to damage the optical system while attempting to clean it, we recommend consulting ChemoMetec before attempting such cleaning.

## **7.2 Decontamination**

In case decontamination of the NucleoCounter® NC-250™ is required, please contact ChemoMetec beforehand for instructions.

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<sup>2</sup> A slide can have as many as 40 views.

## 8 Troubleshooting: Error messages

Under certain conditions, the NucleoView™ NC-250™ interface will display instrument error messages during operation. Corrective actions are suggested below, but if they do not correct the errors, contact ChemoMetec or your local distributor.

Under certain conditions, the NucleoView™ NC-250™ interface will display software error messages during operation. Corrective actions can be found in the NucleoView™ NC-250™ user guide.

### 8.1 Required hard disk space for data storage

The CM files stored on the hard disk can vary in size from 15 MB up to **more than 50 MB**. Therefore, it is important from time to time to check whether there is enough free storage space on the hard disk before running your analysis. We recommend a minimum of 10 GBs free space on the hard disk.

We recommend periodic archiving of CM files to an external storage system. This releases disk space on the PC.

Periodic archiving can be done by either the creation date of the CM file when the free disk space is below a certain threshold, or when the disk space used for CM files exceeds a certain amount. Contact your local IT Administrator to get information about procedures for external data storage.

The archiving parameters could be:

- CM files older than three months are archived.
- CM files uses more than 50 GBs of disk space, archive the oldest CM files until less than 20 GB is used.
- When less than 10 GBs free space, archive the oldest CM files until less than 20 GB is used.

Refer to the NucleoView™ NC-250™ user guide<sup>3</sup> for additional information.

### 8.2 Power-on failure

If the NucleoCounter® NC-250™ cannot be turned on, please verify that the power supply is connected to the NucleoCounter® NC-250™ and a working main outlet.

If the NucleoCounter® NC-250™ still does not turn on, inspect and/or replace the fuse as described below.

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<sup>3</sup> Locate the file "Install\_Guide.html" on the USB Flash drive and follow the directions.





**Figure 11. Location, removal, and inspection of the fuse**

The fuse holder is located at the rear side above the power plug, see Figure 11. Replace it as follows:

1. Disconnect the power supply from the NucleoCounter® NC-250™.
2. Remove the fuse holder using a screwdriver as indicated in Figure 11 (turn CCW).
3. Inspect the fuse. If it needs replacement use one as described in Chapter 9.

If the NucleoCounter® NC-250™ does not turn on after replacement of the fuse, or if the fuse was not broken, please contact ChemoMetec or your local distributor for further instructions.

## 9 Technical specifications

### 9.1 The NucleoCounter® NC-250™

|                                         |                                                                                                                                                                                      |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Optics</b>                           | <b>Lens with 1.75× magnification, 1/2.5" CMOS</b>                                                                                                                                    |
| <b>Sample device</b>                    | <b>NC-Slide A2™ (catalog no. 942-0001) and NC-Slide A8™ (catalog no. 942-0003) disposable chamber slides (two and eight chambers per slide, respectively)</b>                        |
| <b>Excitation (nm)</b>                  | <b>Two LED light sources with peaks at 365 and 500 nm and dark-field white light</b>                                                                                                 |
| <b>Emission (nm)</b>                    | <b>Dual-Band emission filter of 410-460 nm and 540-650 nm</b>                                                                                                                        |
| <b>Sample consumption</b>               | <b>&lt;30 µl (NC-Slide A2™), &lt;10 µl (NC-Slide A8™)</b>                                                                                                                            |
| <b>Analyzed volume</b>                  | <b>0.8 - 16 µl sample per slide chamber</b>                                                                                                                                          |
| <b>Optimal range</b>                    | <b><math>5 \times 10^4</math> - <math>5 \times 10^6</math> cells/ml</b>                                                                                                              |
| <b>Cell types</b>                       | <b>Mammalian, yeast, and insect cells</b>                                                                                                                                            |
| <b>PC specifications</b>                | <b>Microsoft Windows 10 in 32-bit or 64-bit. At least one USB port must be available. Minimum 1024 × 768-pixel screen resolution. At least two GB RAM and 10 GB free disc space.</b> |
| <b>Data presentation</b>                | <b>Images, tables, histograms, scatter plot</b>                                                                                                                                      |
| <b>Weight and dimensions</b>            | <b>9 kg; 29 × 19 × 32 cm [H × W × D]<br/>20 lbs; 12 × 8 × 13 inch [H × W × D]</b>                                                                                                    |
| <b>Supply voltage</b>                   | <b>100 – 240 V~ 50 – 60 Hz</b>                                                                                                                                                       |
| <b>Fuse</b>                             | <b>3.15A/250V</b>                                                                                                                                                                    |
| <b>Power consumption</b>                | <b>5/50 W (power-save mode/peak operation)</b>                                                                                                                                       |
| <b>Operation and storage conditions</b> | <b>Maximum relative humidity: 80% for temperatures up to 31 °C decreasing linearly to 65% at 35 °C. Temperature range: 15 – 35 °C.</b>                                               |

## 9.2 Sample media

Storage and stability      Refer to package insert for the appropriate sample media type.

## 9.3 Standards

Please refer to the section [Declaration of Conformity \(CE\) - EXAMPLE](#) or [Declaration of Conformity \(UKCA\) - EXAMPLE](#) for an overview of compliance to the EU and UK standards.

## 10 Equipment and accessories

On [www.chemometec.com](http://www.chemometec.com) an updated list of Equipment and Accessories for the NucleoCounter® NC-250™ are available.

## 11 General disclaimer

The information contained herein is to the best of our knowledge accurate and complete. However, cell species and cell environments may vary in property. Therefore, systematic and/or random deviation between estimates obtained by the NucleoCounter® and other methods for analysis may occur. As such, nothing contained or stated herein including results obtained from use of the NucleoCounter®, NC-Slide A2™, or NC-Slide A8™ shall be construed to imply any warranty or guarantee. ChemoMetec and affiliated companies shall not be held liable for damages and customers shall indemnify ChemoMetec and affiliated companies against liability flowing from use of potentially inaccurate data generated by the NucleoCounter®. It is recommended that all results obtained with the NucleoCounter® are validated against appropriate reference methods and/or traditional laboratory methods at regular intervals.

## Appendix A: Changes to user guide from last revision

### A.1 New:

- Addition of Declaration of Conformity (UKCA) - *EXAMPLE*

### A.2 Removed:

- Disclaimer Notices updated.
- Declaration of Conformity (CE) – *EXAMPLE*
  - Updated to comply with current directives.
- Section 1 and 1.1 updated.
- Section 7.3 updated.
- Section 9.3 updated

### A.3 Removed:

- N/A

## Appendix B: WEEE directive information in more EU languages

### United Kingdom

#### Correct Disposal of This Product (Waste Electrical & Electronic Equipment) - Europe only



This marking shown on the product or its literature, indicates that it should not be disposed together with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

### Sweden

#### Korrekt avfallshantering av produkten (elektriska och elektroniska produkter) - Endast för Europa



Denna markering på produkten och i manualen anger att den inte bör sorteras tillsammans med annat hushållsavfall när dess livstid är över. Till förebyggande av skada på miljö och hälsa bör produkten hanteras separat för ändamålsenlig återvinning av dess beståndsdelar.

Företagsanvändare bör kontakta leverantören samt verifiera angivna villkor i köpekontraktet. Produkten bör inte hanteras tillsammans med annat kommersiellt avfall.

### Slovenia

#### Ustrezno odstranjevanje tega izdelka (odpadna električna in elektronska oprema) - Samo Evropa



Oznaka na izdelku ali spremljevalni dokumentaciji pomeni, da ga na koncu uporabne dobe ne smemo odstranjevati skupaj z drugimi gospodinjstskimi odpadki. Da bi preprečili morebitno tveganje za okolje ali zdravje človeka zaradi nenadzorovanega odstranjevanja odpadkov, izdelek ločite od drugih vrst odpadkov in ga odgovorno reciklirajte ter tako spodbudite trajnostno ponovno uporabo materialnih virov.

Podjetja naj pokličejo dobavitelja in preverijo pogoje nabavne pogodbe. Tega izdelka pri odstranjevanju ne smete mešati z drugimi gospodarskimi odpadki.

### Slovakia

#### Správna likvidácia tohoto výrobku (Elektrotechnický a elektronický odpad) - Platí len pre Európu



Toto označenie na výrobku alebo v sprievodnej brožúre hovorí, že po skončení jeho životnosti by nemal byť likvidovaný s ostatným odpadom. Prípadnému poškodeniu životného prostredia alebo ľudského zdravia môžete predísť tým, že budete takéto typy výrobkov oddeľovať od ostatného odpadu a vrátite ich na recykláciu.

Priemyselní používatelia by mali kontaktovať svojho dodávateľa a overiť si podmienky kúpnej zmluvy. Tento výrobok by nemal byť likvidovaný spolu s ostatným priemyselným odpadom.

### Portugal

#### Eliminação Correcta Deste Produto (Resíduo de Equipamentos Eléctricos e Electrónicos) - Apenas na Europa



Esta marca, apresentada no produto ou na sua literatura indica que ele não deverá ser eliminado juntamente com os resíduos domésticos indiferenciados no final do seu período de vida útil. Para impedir danos ao ambiente e à saúde humana causados pela eliminação incontrolada de resíduos deverá separar este equipamento de outros tipos de resíduos e reciclá-lo de forma responsável, para promover uma reutilização sustentável dos recursos materiais.

Os utilizadores profissionais deverão contactar o seu fornecedor e consultar os termos e condições do contrato de compra. Este produto não deverá ser misturado com outros resíduos comerciais para eliminação.

### Poland

#### Prawidłowe usuwanie produktu (zużyty sprzęt elektryczny i elektroniczny) - Tylko obszar Europy



Oznaczenie umieszczone na produkcie lub w odnoszących się do niego tekstach wskazuje, że produktu po upływie okresu użytkowania nie należy usuwać z innymi odpadami pochodzącymi z gospodarstw domowych. Aby uniknąć szkodliwego wpływu na środowisko naturalne i zdrowie ludzi wskutek niekontrolowanego usuwania odpadów, prosimy o oddzielenie produktu od innego typu odpadów oraz odpowiedzialny recykling w celu promowania ponownego użycia zasobów materialnych jako stałej praktyki.

Użytkownicy w firmach powinni skontaktować się ze swoim dostawcą i sprawdzić warunki umowy zakupu. Produktu nie należy usuwać razem z innymi odpadami komercyjnymi.

### Norway

#### Korrekt avhending av dette produkt (Avfall elektrisk og elektronisk utstyr) - Kun Europa



Denne merkingen som vises på produktet eller dens dokumentasjon, indikerer at den ikke skal kastes sammen med annet husholdningsavfall ved slutten av sin levetid. For å hindre mulig skade på miljøet eller menneskelig helse fra ukontrollert avfallsavhending, vennligst atskill dette fra andre typer avfall og resirkuler det ansvarlig for å fremme bærekraftig gjenbruk av materielle ressurser.

Forretningsbrukere bør kontakte sin leverandør og undersøke vilkårene i kjøpekontrakten. Dette produktet skal ikke blandes med annet kommersielt avfall som skal kastes.

### Netherlands

#### Correcte verwijdering van dit product (elektrische & elektronische afvalapparatuur) - Alleen Europa



Dit merkteken op het product of het bijbehorende informatiemateriaal duidt erop dat het niet met ander huishoudelijk afval verwijderd moet worden aan het einde van zijn gebruiksduur. Om mogelijke schade aan het milieu of de menselijke gezondheid door ongecontroleerde afvalverwijdering te voorkomen, moet u dit product van andere soorten afval scheiden en op een verantwoorde manier recyclen, zodat het duurzame hergebruik van materiaalbronnen wordt bevorderd.

Zakelijke gebruikers moeten contact opnemen met hun leverancier en de algemene voorwaarden van de koopovereenkomsten nalezen. Dit product moet niet worden gemengd met ander bedrijfsafval voor verwijdering.

### Latvia

#### Izstrādājuma pareiza likvidēšana (nolietotas elektriskās un elektroniskās ierīces) - Tikai Eiropā



Uz izstrādājuma vai tam pievienotajās instrukcijās dotais marķējums norāda, ka to nedrīkst likvidēt kopā ar citiem sadzīves atkritumiem pēc tā ekspluatācijas laika. Lai novērstu viedei un cilvēku veselībai iespējamo kaitējumu, kas ir saistīts ar nekontrolējamu atkritumu likvidēšanu, tas jānošķir no citiem atkritumiem un jāpārstrādā, lai sekmētu materiālo resursu atbildīgu atkārtotu lietošanu.

Rūpnieciskajiem lietotājiem jāsaņemas ar piegādātāju un jāpārbauda pirkuma līguma nosacījumi. Šo izstrādājumu nedrīkst sajaukt ar citiem likvidējamajiem rūpnieciskajiem atkritumiem.

### Lithuania

#### Tinkamas produkto atliekų tvarkymas (atitarnavusi elektros ir elektronikos įranga) - Tik Europai



Šis ženklas, pateikiamas ant produkto ar jo dokumentacijoje, nurodo, kad pasibaigus produkto tarnavimo laikui, jo negalima išmesti kartu su kitomis buitinėmis atliekomis. Kad būtų išvengta galimos nekontroliuojamo atliekų išmetimo žalos aplinkai arba žmonių sveikatai, ir siekiant skatinti aplinką tausojantį antrinių žaliavų panaudojimą, pašom atskirti jį nuo kitų rūšių atliekų ir atiduoti perdirbti.

Verslo vartotojai turėtų kreiptis į savo tiekėją ir peržiūrėti pirkimo sutarties sąlygas. Šis produkto tvarkant atliekas negali būti sumaišytas su kitomis atliekomis.

### Italy

#### Corretto smaltimento del prodotto (rifiuti elettrici ed elettronici) - Solo Europa



Il marchio riportato sul prodotto o sulla sua documentazione indica che il prodotto non deve essere smaltito con altri rifiuti domestici al termine del ciclo di vita. Per evitare eventuali danni all'ambiente o alla salute causati dall'inopportuno smaltimento dei rifiuti, si invita l'utente a separare questo prodotto da altri tipi di rifiuti e di riciclarlo in maniera responsabile per favorire il riutilizzo sostenibile delle risorse materiali.

Gli utenti aziendali sono invitati a contattare il proprio fornitore e verificare i termini e le condizioni del contratto di acquisto. Questo prodotto non deve essere smaltito unitamente ad altri rifiuti commerciali.

### Hungary

#### A termék megfelel leadása (Elektromos és elektronikus készülékek hulladékkezelése) - Kizárólag Európa



A terméken vagy a hozzá tartozó dokumentáción szereplő jelzés arra utal, hogy hasznos élettartama végén a terméket nem szabad háztartási hulladékkal együtt kidobni. Annak érdekében, hogy megel zhet legyen a szabálytalan hulladékleadás által okozott környezet- és egészségkárosodás, különítse ezt el a többi hulladéktól, és felel sségteljesen gondoskodjon a hulladék leadásáról, a hulladékhanyagok fenntartható szint újrafelhasználása céljából.

Az üzleti felhasználók lépjenek kapcsolatba a forgalmazóval, és vizsgálják meg az adásvételi szerz dés feltételeit. A terméket nem szabad leadni kereskedelmi forgalomból származó egyéb hulladékkal együtt.

### France

#### Comment éliminer ce produit (déchets d'équipements électriques et électroniques) - Europe uniquement



Ce symbole sur le produit ou sa documentation indique qu'il ne doit pas être éliminé en fin de vie avec les autres déchets ménagers. L'élimination incontrôlée des déchets pouvant porter préjudice à l'environnement ou à la santé humaine, veuillez le séparer des autres types de déchets et le recycler de façon responsable. Vous favoriserez ainsi la réutilisation durable des ressources matérielles.

Les entreprises sont invitées à contacter leurs fournisseurs et à consulter les conditions de leur contrat de vente. Ce produit ne doit pas être éliminé avec les autres déchets commerciaux.



## Finland

**Tämän tuotteen turvallinen hävittäminen**  
**(elektroniikka ja sähkölaitteet) - Vain Eurooppa**

Oheinen merkintä tuotteessa tai tuotteen oheismateriaalissa merkitsee, että tätä tuotetta ei tule hävittää kotitalousjätteen mukana sen elinkaaren päätyttyä. Hallitsemattomasta jätteenkäsittelystä ympäristölle ja kanssaihminen terveydelle aiheutuvien vahinkojen välttämiseksi tuote tulee käsitellä muista jätteistä erillään. Jäte on hyvä kierrättää raaka-aineiksi kestävä ympäristökehityksen takia.

Yrityskäyttäjien tulisi ottaa yhteyttä tavaran toimittajaan ja selvittää hankintasopimuksen ehdot. Tätä tuotetta ei tule hävittää muun kaupallisen jätteen seassa.

## Estonia

**Õige viis toote kasutusest kõrvaldamiseks**  
**(elektriliste ja elektrooniliste seadmete jäätmed) - Ainult Euroopa**

Selleline tähistus tootel või selle dokumentidel näitab, et toodet ei tohi kasutusaaja lõppemisel kõrvaldada koos muude olmejäätmetega. Selleks, et vältida jäätmete kontrollimatu kõrvaldamisega seotud võimaliku kahju tekitamist keskkonnale või inimeste tervisele ning edendada materiaalsete vahendite säästvat taaskasutust, eraldage toode muudest jäätmetest ja suunake taasinglusse.

Firmad peaksid võtma ühendust tarnijaga ning kontrollima ostulepingu tingimusi ja sätteid. Toodet ei tohi panna muude hävitamiseks mõeldud kaubandusjäätmete hulka.

## Spain

**Eliminación correcta de este producto**  
**(material eléctrico y electrónico de descarte) - Europa solamente**

La presencia de esta marca en el producto o en el material informativo que lo acompaña, indica que al finalizar su vida útil no deberá eliminarse junto con otros residuos domésticos. Para evitar los posibles daños al medio ambiente o a la salud humana que representa la eliminación incontrolada de residuos, separe este producto de otros tipos de residuos y reciclelo correctamente para promover la reutilización sostenible de recursos materiales.

Los usuarios comerciales pueden contactar con su proveedor y consultar las condiciones del contrato de compra. Este producto no debe eliminarse mezclado con otros residuos comerciales.

## Greece

**Σωστή Διάθεση αυτού του Προϊόντος**  
**(Απορρίμματα Ηλεκτρικού & Ηλεκτρονικού Εξοπλισμού) - Μόνον για την Ευρώπη**

Τα σήματα που εμφανίζονται επάνω στο προϊόν ή στα εγχειρίδια που το συνοδεύουν, υποδεικνύουν ότι δεν θα πρέπει να ρίπεται μαζί με τα υπόλοιπα οικιακά απορρίμματα μετά το τέλος του κύκλου ζωής του. Προκειμένου να αποφευχθούν ενδεχόμενες βλαβερές συνέπειες στο περιβάλλον ή την υγεία εξαιτίας της ανεξέλεγκτης διάθεσης απορριμμάτων, σας παρακαλούμε να το διαχωρίσετε από άλλους τύπους απορριμμάτων και να το ανακυκλώσετε, ώστε να βοηθήσετε στην βιώσιμη επαναχρησιμοποίηση των υλικών πόρων.

Οι επιχειρήσεις-χρήστες θα πρέπει να έλθουν σε επαφή με τον προμηθευτή τους και να ελέγξουν τους όρους και τις προϋποθέσεις του συμβολαίου πώλησης. Το προϊόν αυτό δεν θα πρέπει να αναμειγνύεται με άλλα συνηθισμένα απορρίμματα προς διάθεση.

## Germany

**Korrekte Entsorgung dieses Produkts**  
**(Elektromüll) - Nur Europa**

Anzuwenden in den Ländern der Europäischen Union und anderen europäischen Ländern mit einem separaten Sammelsystem) Die Kennzeichnung auf dem Produkt bzw. auf der dazugehörigen Literatur gibt an, dass es nach seiner Lebensdauer nicht zusammen mit dem normalen Haushaltsmüll entsorgt werden darf. Entsorgen Sie dieses Gerät bitte getrennt von anderen Abfällen, um der Umwelt bzw. der menschlichen Gesundheit nicht durch unkontrollierte Müllbeseitigung zu schaden. Recyceln Sie das Gerät, um die nachhaltige Wiederverwertung von stofflichen Ressourcen zu fördern.

Gewerbliche Nutzer sollten sich an Ihren Lieferanten wenden und die Bedingungen des Verkaufsvertrags konsultieren. Dieses Produkt darf nicht zusammen mit anderem Gewerbemüll entsorgt werden.

## Denmark

**Korrekt affaldsbortskaffelse af dette produkt**  
**(elektrisk & elektronisk udstyr) - Kun Europa**

Mærket på dette produkt eller i den medfølgende dokumentation betyder, at produktet ikke må bortskaffes sammen med almindeligt husholdningsaffald efter endt levetid. For at undgå skadelige miljø- eller sundhedspåvirkninger på grund af ukontrolleret affaldsbortskaffelse skal dette produkt bortskaffes særskilt fra andet affald og indleveres behørigt til fremme for bæredygtigt materiale genvinning.

Erhvervsbrugere bedes kontakte leverandøren og læse betingelserne og vilkårene i købekontrakten. Dette produkt bør ikke bortskaffes sammen med andet erhvervsaffald.

## Czechoslovakia

**Správná likvidace tohoto produktu**  
**(Zničení elektrického a elektronického zařízení) - Pouze Evropa**

Tato značka zobrazená na produktu nebo v dokumentaci znamená, že by neměl být používán s jinými domácími zařízeními po skončení svého funkčního období. Aby se zabránilo možnému znečištění životního prostředí nebo zranění člověka díky nekontrolovanému zničení, oddělte je prosíme od dalších typů odpadů a recyklujte je zodpovědně k podpoře opětovného využití hmotných zdrojů.

Obchodníci by měli kontaktovat své dodavatele a zkontrolovat všechny podmínky koupě. Tento výrobek by se neměl míchat s jinými komerčními produkty, určenými k likvidaci.

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