Carrier Exposure Wizard

Introduction
The carrier exposure wizard safely loads and unloads substrates from a carrier.
Single or multiple (batch) substrate mode.
Flexibility for use of default or advanced options (mapping).
Writehead detection according to selected job writing mode.
Assisted change of writehead (requires operator intervention).
Never change “write head” unless the software instructs you to do so.

Before starting the exposure

Convert your design with the Conversion Job Manager on the Linux box (see separate guide)
Step 0 – Write Head / Write Mode

Warning for users of the direct write laser DWL200 (previous generation tool):

Do not change the **write head** in preparation of the machine for the job as done on DWL200

Only change the **write head** if the user interface instructs you to do so.

Disregarding this warning may lead to damages on the tool. Last time this occurred, it required 5 business days to repair it.
Step 1 – Login/Startup

on “zone pc”: Login to vpg200

![Login Screen](image)

on the “user-pc”: start the application with the “Hi” button (Heidelberg Instruments) (if not running).

![Hi Button](image)

If the application was already running, but it was logged in as user “Student”, typically with a “job finished” popup window, then change user (login popup follows):

![Change User Dialog](image)
Step 1b – Login/Startup

Login with the “Student” account, password [ ] (without the square brackets “[ ]”)

If in the Login popup you click "Cancel" by error, no problem, in either case yes/no restart application with "Hi" button

The application will start (windows: “LiveWindow” will disappear, “C#-Menu” will stay.)

Start the “Carrier Exposure Wizard” from the “Wizardry” tab
[ HIMT_application->Wizardry->Carrier Exposure Wizard ]

If you forgot to login on the “zone pc”, then the software will not allow you to login and ignore your password. Upon successful login, you will then see a message similar to the following:
Step 2 – Carrier station selection

If you write masks, then chose “MaskStation”.
If you write wafers, then chose “WaferStation”.

**MaskStation**
Automatic detection of size (e.g. 125mm x 125mm) and number of slots (20)

**Do not take carrier outside for loading (detection switches are too fragile)**
- Slide your Cr-blank into slot.
- Verify that Cr-blank is sitting horizontally in one slot and not diagonally between two slots.

**WaferStation**
Automatic detection of size (e.g. 100mm x 100mm) and number of slots (25)

**You may take carrier out for loading.**
- Slide your wafer into slot.
- Verify that wafers a sitting horizontally in one slot and not diagonally between two slots.
- Load carrier from top, upon insertion, avoid lateral sliding of the carrier (switches are fragile).
Step 2b – Carrier station selection

Case: MaskStation

Do not remove the Mask Carrier. The fragile microswitches get easily damaged.

Carrier slots are numbered from bottom to top.

Human readable hint every 5 slots.

Insert your mask, remember slot number.

Start filling slots from the bottom, as the mechanical cassette alignment is better.

Verify that Cr-blank is inserted horizontally in single slot and not spanning diagonally between two slots: peek from the main machine door frontally on to carrier.

Close the cassette bay window.
Step 2c – Carrier station selection

Example: Waferstation

Align the primary flat of the wafer with the bottom of the wafer carrier. This makes that the prealigner finds the primary flat faster and does not have to iterate several times.

We recommend to start filling the slots from the bottom, as the mechanical precision is better than in the top slots.

Verify that wafer is sitting horizontally in one slot and not diagonally between two slots, such as by peeking from the main machine door frontally on the carrier.
Step 3 – Carrier Slots

Carrier Slots are numbered from bottom to top.

A batch is processed in ascending order (masks 1-20 / wafers1-25)

Select one slot (turns blue)

Multiple selections are allowed (but same design will be filled in)

Select “Next Step” (all options) or "Carrier slots"
Step 4-5 – Edit Substrate / Exposure Map

Edit substrate:
Surface must be set to “Default”

Select “Exposure Map” or “Next Step”

Edit exposure map:
Default exposure uses single field.

Skip modifying Number of Columns/Rows, and Die Width/Height.

Select "Design Selection” or “Next Step”
Step 6 – Design selection

Design selection

Open “General” by clicking on “+”

Always click on “update” button to synchronize user-pc with conversion-pc

Select by jobname in category

Properties are displayed (numberOfStripes, Size, WriteHead)

Select “Parameters” or “Next Step”
Step 7 - Parameters

Parameters (reduced set)
Taken from Cr blank calibration table:

- **FocusMode** [pneumatic/optical for 10mm&4mm]
- **Focus** [in %]
- **Intensity** [in %]
- Exposure count [leave at 1, cumulate exposures for higher doses]
- **XY Offset** [leave at 0, 0]

**Perform Pre Alignment:** only for Wafer: [X]

**Automatic centering masks** > Platecenter

**wafers** > Wafercenter/Wafercenter+Flat

Contact edge Detection [ignore]

Finish with “**Set Job for slot XX**”.

Wizard returns to “Carrier slots”
Step 8 – start job or set up batch

Wizard returns to “Carrier slots”

Select next carrier slot to assign next design.

Check the "Logout when finished" check box to quit application and to stop billing automatically.

This is the last moment to load the plates into the carrier slots before proceeding.

When all jobs are configured, then click button “Start Processing” to launch the batch.

Make sure there is no forgotten wafer or mask sitting on the stage!
Step 9: Writehead change procedure

Only change **writehead** if instructed.

- Insert requested writehead
  - Push to end of slot with index finger
- Clamp writehead (push lever) without holding the writehead
- Release writehead (pull lever) then remove current writehead
- Close exposure bay window
- Confirm completion of procedure by clicking Ok
- **wait, don't acknowledge yet!**

**Acknowledgement now**

**Exposure will now start. Be patient. The machine is autocalibrating.**
Running follow up (1)

Close the door of the loading dock. Loading is automatic.

**Change the write head only after the software asks you to do so.**

Proceed to change write head manually according to staff instructions

Close exposure bay window

Confirm change only AFTER you have completed the operation by clicking “OK”.

Exposure will now start. Be patient. The machine is autocalibrating.

(End of exposure will start unloading of wafer immediately)
Running follow up (2)

Exposure
Color code:
- Orange = exposure of die
- Blue = exposure done

Proceed next job
(Stop exposure will start unloading immediately and skip to next slot for processing)
Finish

“Logout when finished” will cause autologout at end of job, and will stop billing

Logon again to start a new batch

Release equipment & logout form CMi -user access PC / Zone PC