

Expert Summary of Revolution

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current for: v1.6.0

Installing Revolution

- From the CD or downloaded folder, drag the Revolution 1.6.0 folder to any location on your hard drive. If this is the initial installation of the software, nothing further is required.
- You can install Revolution as many times as you like. Each Revolution folder operates autonomously from the others - each contains its own set of independent preferences. This is useful for multiuser operating systems. Two warnings: 1) running more than one copy of Revolution at the same time is unsupported; 2) if you use shortcuts (aliases) from the desktop (for example), be sure to update them to point to the new version.
- For Spectral Engine II systems (older), the correct software drivers and hasp must be installed for hardware communication. For Universal Spectral Engine systems (newer), the network subnet must be correctly configured (USE always runs as 192.168.9.12). For **all** systems, the hasp must be installed to do EDX quant.

Upgrading Revolution

- If the upgrade involves moving to new computers, the Install steps above will have to be followed as a general rule.
- Archive any older Revolution folders by adding a date or other unique marker to that folder's name, and copy (**not move**) your old preference files to the new Revolution folder (for identification, all preference files begin with an underscore). This procedure preserves your older version if you have to go back to it.
- It is strongly recommended that you zip or otherwise compress the Revolution archive. Not only does this make it more compact for backup purposes, but it also disables older copies of Revolution (because they are contained inside a zipped folder). If you do not zip or otherwise archive the application folder, it is still recommended that you disable the old Revolution program (by removing the exe extension, for example). This will prevent it from ever being run accidentally.

Launching Revolution

- Double-click on the Revolution program icon. The initial launch will automatically create default preferences in the Revolution folder, or will use old preferences if they have been copied over. Windows users will see a click-thru debug window indicating whether the hardware was found. Mac users will not see this debug window. All users can check whether hardware is properly installed by selecting the About box and reading the splash screen.
- If no hardware or hasp is installed, Revolution will operate in demo mode only: new images or spectra or maps **cannot** be acquired, and no spectra can be quanted a second or more times. Existing images, spectra, and maps **can** be opened, manipulated, and re-saved.

S(T)EM images

- Select **Mode** → **SEM Image**
- Set the desired resolution

- Hit the Setup button to set/change:
 - channel selection
 - pixel dwell
 - frame average
 - line sync
 - save format
- Exit Setup
- If no EM Client is available, select the magnification or select "Ask Mag"
- Hit the Acquire button (camera icon) to acquire an electron image
- Enter the magnification if "Ask Mag" is selected; hit OK to proceed
- While acquiring or after image is acquired, right-click in image to:
 - show/hide waveform monitor (line plot)
 - adjust levels via histogram tool
 - edit magnification and micron marker display
- Select **File** → **Save** or hit the image close box to save the image
- Select the desired image format, name, and save location, and finish saving the image

Calibrating Micron Marker

- Load sample with known dimensional features
- Set correct microscope magnification, or enter correct magnification at the **Ask Mag** prompt
- Acquire any image (see above)
- In acquired image, right-click and select **Edit Magnification**
- New window with acquired image appears - resize window on screen as needed
- Select the measurement tool (upper right)
- Mouse down in the image and draw a measurement marker across a feature of known dimension
- Enter the value of the measurement in the **Line Length** field
- Select the marker dimension in the adjacent menu
- Turn on the **Set Default** checkbox
- Hit **Set**
- Hit **OK** to exit the window
- The acquired image and all images going forward are now calibrated,
as long as Revolution is set to the correct EM magnification

EDX Spectra

- Select **Mode** → **EDS Spectra**
- Hit the Setup button to set/change:
 - display channels
 - pulse processor (Spectral Engine II systems only)
 - DXP time constant (Universal Spectral Engine systems only)
 - export format
- Exit Setup
- If no EM Client is available, select/change the beam kV
- Hit the Acquire button (camera icon) to acquire a new spectrum
- Turn on the Live Quant (qnt) button to see real-time updating of the analysis
- While acquiring or after spectrum is acquired, right-click in spectrum to:
 - rename spectrum
 - edit display
 - open KLM window and show/hide element markers
 - edit elements to identify manually (on/off) or automatically
- Toggle the Acquire button (camera icon) to stop spectrum acquisition
- Select **File** → **Save** or hit the spectrum close box to save the spectrum
- Select the name, and save location, and finish saving the spectrum

EDX Images (x-ray maps)

- Select **Mode** → **EDS Image**
- Set the desired resolution
- If no EM Client is available, select/change the magnification or select "Ask Mag"
- If no EM Client is available, select/change the beam kV
- Hit the Setup button to set/change:
 - fast (frame) or slow (pixel) map
 - x-ray dwell
 - number of frames
 - line sync
 - electron image channel settings
 - DXP time constant (Universal Spectral Engine systems only)
- Exit Setup
- Hit the Acquire button (camera icon) to acquire an x-ray image
- Enter the magnification if "Ask Mag" is selected; hit OK to proceed

- While acquiring or after x-ray image is acquired, right-click in container to:
 - extract one or all images for saving to disk
 - adjust levels via histogram tool
 - change image color
 - ROI Processing
 - right click in spectrum to Auto-ID and select maps for display
 - manually select or deselect elements for display
 - toggle color maps
 - toggle phase map
 - toggle background subtraction
 - show/hide KLM markers (for ROI processing window only)
 - engage Spatial Frame Lock (tm)
 - hit OK to see updates in container window
- Toggle the Acquire button (camera icon) to stop x-ray image acquisition
- Select **Edit** → **Copy** to put a container image into the clipboard for pasting
- Select **File** → **Save** or hit the x-ray image close box to save the x-ray container
- Select the desired name and save location, and finish saving the x-ray image

Quitting Revolution

- Terminate any in-progress acquisition
- Save any unsaved images, spectra, or maps
- Select **Quit** (Macintosh) or **Exit** (Windows) from the **File** menu.

*[Download](#) a movie showing all of the above actions
(requires [Quicktime](#) to be installed!)*
