

## Introducing two choices for your high mass detection needs

A decade in development, CovalX is proud to announce our fourth generation in a series of High-Mass MALDI detection systems based on a unique conversion dynode technology. The CovalX HM4 and Pearl High-Mass systems enable unmatched detection of macromolecular ions into the MegaDalton range with nM sensitivity. The Pearl offers all the benefits in sensitivity and saturation you have come to trust from CovalX while keeping an emphasis on value. The HM4 system is the latest flagship reference for the detection of high molecular weight macromolecules.



### Latest Features:

- **Multiple Detection Systems to Fit Your Needs**

*HM4: Detection 2MDa and above*

*Pearl: Detection up to 1MDa*

- **Upgraded electronics**

*Integrated mainboard design*

*Noise reducing baseline blanking*

- **Latest touchscreen and app**

*Newest, fastest tablets utilized*

*Optimized applications*

- **Improved vacuum systems**

*Lower vacuum levels achievable*

*Faster pumping time*



HM4 retrofit system

### Pearl High Mass Detection System

By making use of our years of knowledge and utilizing specially selected components CovalX's Pearl High Mass Detection System provides an order of magnitude better detection than any standard OEM detector available. Through years of product development and selecting specific components it is possible to achieve superb sensitivity at a reasonable cost. The CovalX Pearl provides access to all the CovalX applications up to MegaDalton mass range.



Pearl retrofit system

### HM4 Flagship High Mass Detection System

The CovalX HM4 High Mass Detection retrofit systems incorporate every piece of technology possible for detection of high mass ions at the most sensitive levels. The Conversion Dynodes and Detection elements are specifically selected and all available features are included. Both positive and negative ion detection come standard, a large touchscreen with updated application including full control and monitoring of the detector system. Specifically designed for ultrahigh mass applications with detection to 2MDa and above.

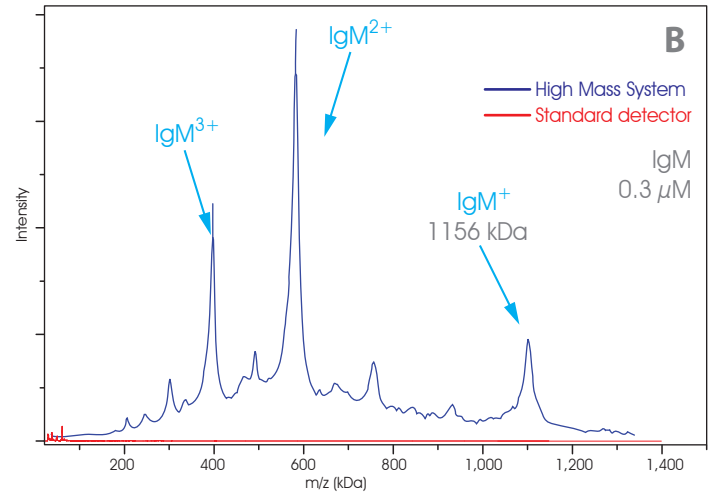
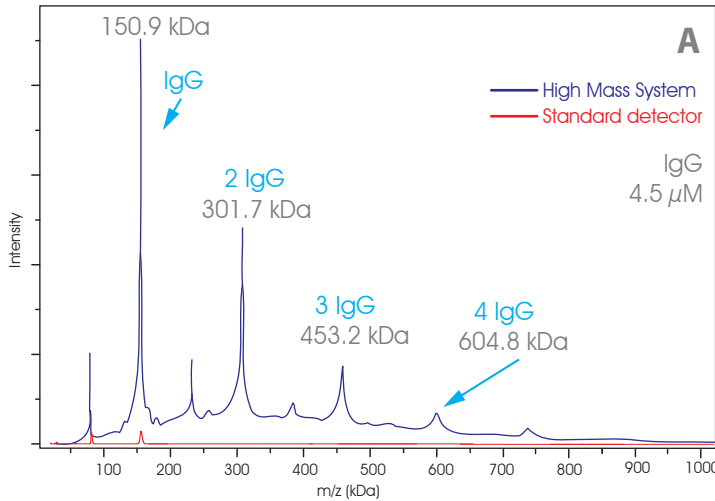
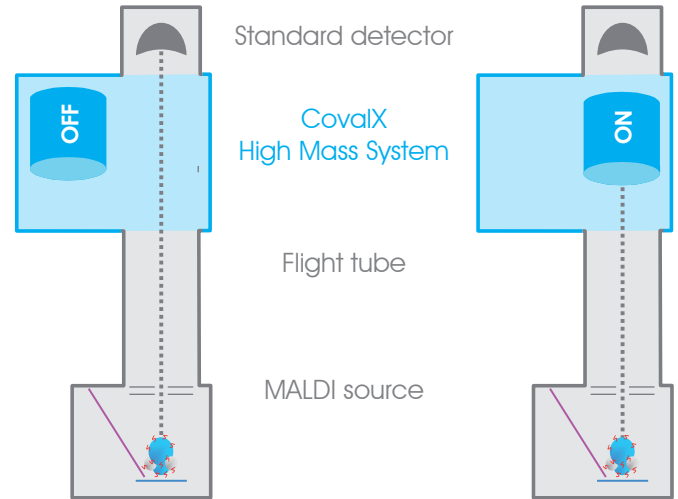
**HM4 and Pearl: High-Mass retrofit systems are available for every standard MALDI ToF mass spec**

- **AB Sciex**  
MALDI ToF/ToF 5800      MALDI ToF/ToF 4800  
MALDI ToF/ToF 4700      Voyager series
- **Bruker**  
Ultraflex series      Autoflex series  
Reflex series      Biflex series
- **Shimadzu**  
Axima Performance      Axima Assurance  
Axima Confidence      Axima CFR / CFR plus

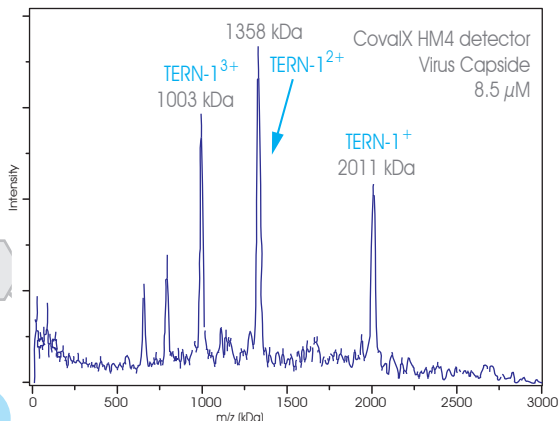
## Outstanding sensitivity for high molecular weight macromolecules

The CovalX HM4 and Pearl High-Mass detector retrofit systems allow one to reach outstanding sensitivity for high-molecular weight macromolecules. Complex mixtures of proteins can be detected with low saturation. By switching between the standard detector and the CovalX High Mass system, the operator can easily observe the performance of the High-Mass detector for high-molecular weight macromolecules.

CovalX systems are fully compatible with all major MALDI mass spectrometers, ensuring that your instrument operates according to original specifications and all warranty and service agreements remain in effect.



**Figure 2.** Comparison between standard detection (red) and HM4 high-mass detection (blue) for 2 protein samples (A: IgG and B: IgM). Each pair of spectra is acquired from the same spot under identical instrument settings (i.e. laser power, voltages, number of shots, etc) by only switching between detectors using the CovalX wireless tablet controller. The sensitivity of HM4 for high-molecular weight macromolecules enables the detection of hexameric IgM monomers at 1156kDa. Also observed are clusters of IgG at 150, 300, 450 and 600kDa which are formed during the MALDI ionization process. This demonstrates not only the sensitivity of the HM4 detector but the lack of saturation under abundant ion signals.



**Figure 3.** HM4 High-Mass MALDI ToF mass spectrum of an intact virus capsid (8.5μM). The singly charged pseudo-molecular ions of virus capsid TERN-1 is detected with MH<sup>+</sup>=2011 kDa

### Fourth Generation High-Mass Detector Retrofit Systems Comparison

	Pearl	HM4
Full compatibility with any MALDI Instrument (Shimadzu, Bruker, ABSciex)	✓	✓
Wireless Touchscreen Control	✓	✓
Automated switching between High-Mass & Standard Detection	✓	✓
Detection of macromolecules and protein complexes up to 1 MDa	✓	✓
Positive Ion Detection	✓	✓
Detection of macromolecules and protein complexes to 2 MDa and above		✓
Negative Ion Detection		✓