Unrivaled linear variable filters
Linear Variable Order Sorting Filter for suppression of higher orders and background noise in spectrometers (left) and standard size LVLWP (right).

Different Linear Variable Bandpass Filters mounted in front of line scan and area scan sensors for hyperspectral imaging applications.

**DO YOU FACE THIS PROBLEM?**

Do you often find that your standard edge filters are just a little bit off with the edge wavelength from what you require? Or that a conventional bandpass filter has the wrong center wavelength or bandwidth? Are you tired of stocking dozens of filters but still can’t find the right filter? If so, a fully tuneable, high performance filter will solve your problem!

**HERE’S YOUR SOLUTION!**

If you find yourself in one of the situations above then DELTA’s Linear Variable Filters (LVF) are the solution to your dilemma. DELTA’s comprehensive family of LVFs gives you all the freedom you need. The filters cover the UV-VIS-NIR wavelength range and comprise long wave pass, short wave pass and bandpass filters as well as dichroic beam splitters. They enable you to design your experiment or instrument as the application requires. DELTA’s Linear Variable Filters do not limit your selection of filters to those in a catalog but provide an endless amount of customization right at your fingertips by offering full flexibility and tuneability without compromise on performance.

**How does a DELTA Linear Variable Filter work?**

A Linear Variable Filter is a filter whose spectral properties vary linearly along one dimension of the filter. A conventional fixed wavelength interference (or dielectric) filter consists of many dielectric layers with constant thickness across the entire filter substrate. A DELTA LVF is manufactured in such a way that the thickness of the layers increases linearly from one end of the filter substrate to the other end.

Cross section through an LVF along the gradient direction of the filter.

Some of the indefinitely many passbands along a Linear Variable Bandpass Filter.
**Where to use DELTA’s Linear Variable Filters?**

DELTA’s new Linear Variable Filters with higher transmission, steeper edges and deep blocking can now be used in many applications, including:

- Wavelength selectors for Super Continuum Lasers
- Wavelength selectors for Xenon lamps
- Blocking of higher order contributions and suppression of background noise in grating-based instruments and mini spectrometers
- Purely filter-based spectrometers
- Purely filter-based fluorescence measurement systems
- Compact filter-based mini spectrometers
- Hyperspectral imaging cameras and instruments

**Key features and user benefits**

Unlike other variable filters, DELTA’s Linear Variable Filters do not use thin metal layers or colored glass. They are constructed from all-dielectric materials and manufactured with DELTA’s Ultra-Hard-Coating (UHC) technology. This provides some outstanding features for your benefit:

- Robust and durable surface coatings on unglued quartz substrates
- Minimal auto-fluorescence
- High laser damage threshold
- Practically no spectral shift with temperature
- High transmission, no leaks in blocking range

**Challenge us with your requirements!**

DELTA has developed a complete family of Linear Variable Filters for you to choose from. For technical details please refer to our homepage or the specific datasheets.

- Short Wavelength Pass Filters
- Long Wavelength Pass Filters
- Order Sorting Filters
- Dichroic optimised for 45° AOI
- UV Bandpass Filter
- VIS Bandpass Filter
- NIR Bandpass Filter

Should you not find what you need among our standard filters our development team and network of sales offices and distributors are happy to work with you on a customized solution.
DELTA Optical Filters designs, manufactures, tests and supplies world class leading optical thin film filters and components. Our products are used in a variety of applications within the medical, bioscience, imaging, sensor, analytical and similar industries and is certified according to ISO 9001 and ISO 1400 by Bureau Veritas.

Located in Hørsholm, Denmark, DELTA has since the 1960s been the pioneer in computer designed optical coatings. In the early 90s, DELTA was among the first to implement computer controlled and automatic deposition of advanced optical coatings. We help the world’s leading manufacturers of analytical and biomedical instruments to set new standards overall. DELTA is experienced with electronics, microelectronics, software technology, light, optics, acoustics, vibration and sensor systems.

Please visit filters.madebydelta.com for our standard optical filter product range or contact us for an informal talk about your requirements. DELTA’s TopPride™ range of fluorescence filter sets represents the utmost in high transmission, steep edges and highly broadbanded blocking. Our products vary from custom designed solutions to a broad range of optical filters, filter sets, cubes, splitters and mirrors.

DELTA Light & Optics is also an original equipment manufacturer (OEM) supplier of optical sensors and instrumentation and operates a nationally accredited lighting laboratory.

For the past six decades DELTA has supplied world leading OEMs with first class optical filters, both for development purposes and in production volumes. DELTA is more than just an optical filter supplier. Often we are involved in challenging the complete optical design, leading to a more robust and production friendly total solution. If you don’t know your optical filter specifications, explain your measurement challenge, and DELTA will help your total solution to success.