thermo scientific

PRODUCT SPECIFICATIONS

Vanquish Diode Array Detectors and Multi Wavelength Detectors

# The collective power of chromatography

## LC that takes your productivity to new heights

### Vanquish platform benefits

- Precision and reproducibility to meet every application demand
- Widest portfolio of detection technologies
- Reduced maintenance, easier set-up with Thermo Scientific™ Viper™ fingertight fittings
- Dedicated solutions for exceptional LC-MS performance

**Keywords**
Vanquish Horizon, Vanquish Flex, Vanquish Core, Vanquish Duo, linearity, sensitivity, HPLC, UHPLC, UV-Vis, diode array detection, multi wavelength detection

### Flexibility and performance combined

Thermo Scientific™ Vanquish™ Diode Array Detectors (DADs) and Multiple Wavelength Detectors (MWDs) are designed for highest performance, reliability and flexibility. Our detectors offer excellent linearity and optimized noise performance. Detect trace analytes next to main compounds due to a wide dynamic range and a low limit of detection. A wide portfolio of flow cells allows you to find the perfect match to your application needs.

- Dispersion-optimized, robust Vanquish Flex and Core flow cells are ideally suited for any setup including LC-MS applications and other hyphenated techniques.
- If highest performance is in demand: Thermo Scientific™ LightPipe™ detection technology and benefit from outstanding sensitivity with low-dispersion 10 mm and 60 mm flow cells. Achieve best signal-to-noise performance through the combination of lowest baseline noise, minimum peak dispersion, and a very long light path.
- Versatile and ultrafast separations with a wide spectral range, programmable optical slit widths, low baseline drift, fast data acquisition, up to 10 absorption channels and one 3D field.

ThermoFisher SCIENTIFIC

| Product specifications | |
|---|---|
| **Detector** | **Diode Array Detector HL** |
| Optical design | Single-beam, reverse-optics design with concave holographic grating, High Numerical Aperture (NA) achromatic optics, 1024 element photodiode array. |
| Light source | Deuterium lamp |
| Wavelength range | 190–680 nm |
| Spectral bandwidth | Pixel resolution: 0.5 nm (average)<br>Optical resolution: 1 nm (FWHM with 1 nm slit width) |
| Slit width | Settable: 1 nm, 2 nm, 4 nm, 8 nm |
| Wavelength accuracy | ±1 nm |
| Wavelength repeatability | ±0.1 nm |
| Wavelength calibration | Internal calibration with D-alpha line of the deuterium lamp |
| Wavelength validation | Internal validation with holmium oxide filter |
| Number of signal channels | 10 + 3D field |
| Data collection rate | Up to 200 Hz |
| Noise | <±3 µAU at 230 nm |
| Drift | <0.5 mAU/h at 230 nm |
| Linearity | <5% at 2.0 AU (typically <5% at 2.5 AU) |
| Flow cells | 2 options, see ordering information for details |
| Flow cell pressure limit | 6 MPa (60 bar, 870 psi) |
| Wetted parts | Fused silica, PEEK, perfluoroelastomer, titanium |
| Safety features | Power-up diagnostics of optics, cooling fans, motors and electronics. Leak detection and safe leak handling. |
| PC connection | USB 2.0; 3-port-HUB to connect further Vanquish modules |
| GLP | Predictive performance functions for scheduling maintenance procedures based on the actual operating and usage conditions of the detector: lamp age and ignitions, lamp intensity degradation, leak detection, service monitoring period. All system parameters logged in the Thermo Scientific™ Chromeleon™ CDS Audit Trail. |
| Environmental conditions | Operation: 5–35 °C, 20–80% RH (non condensing), max. 2000 m above sea-level<br>Storage: -20–45 °C, max. 60% RH (non condensing) |
| Power requirements | 100–240 V AC, 50/60 Hz, max. 245 W/255 VA |
| Dimensions (h × w × d) | 159 mm × 420 mm × 620 mm (6.3 × 16.5 × 24.4 in.) |
| Weight | 17 kg (37 lbs) |

| Product specifications | | | |
|---|---|---|---|
| **Detector** | **Diode Array Detector FG** | **Diode Array Detector CG** | **Multiple Wavelength Detector CG** |
| Optical design | Single-beam, reverse-optics design with concave holographic grating, achromatic optics, 1024 element photodiode array | | |
| Light source | Deuterium lamp<br>Tungsten lamp | Deuterium lamp<br>Tungsten lamp (optional) | |
| Wavelength range | 190–800 nm (with deuterium and tungsten lamp) | | |
| Spectral bandwidth | Pixel resolution: 0.6 nm (average) | | |
| Slit width | Settable: Wide, narrow | Fixed: Wide | |
| Wavelength accuracy | ±1 nm | | |
| Wavelength repeatability | ±0.1 nm | | |
| Wavelength calibration | Internal calibration with D-alpha line of the deuterium lamp | | |
| Wavelength validation | Internal validation with holmium oxide filter | | |
| Number of signal channels | Up to 10 + 3D field | Up to 8 + 3D field | Up to 8 |
| Data collection rate | Up to 250 Hz<br>(including 3D acquisition) | Up to 125 Hz<br>(including 3D acquisition) | Up to 125 Hz |
| Noise | <±6 µAU at 254 nm | | |
| Drift | <1 mAU/h (typically <0.5 mAU/h) at 254 nm | | |
| Linearity | <5% at 2.2 AU (typically <5% at 2.7 AU) | | |
| Flow cells | 5 options, see ordering information for details | | |
| Flow cell pressure limit | Standard biocompatible flow cell: 5 MPa (50 bar, 720 psi)<br>Standard, semi-analytical, semi-micro and semi-micro biocompatible flow cell: 12 MPa (120 bar, 1740 psi) | | |
| Wetted parts | Standard, semi-analytical and semi-micro flow cell: SST, fused silica, PTFE, PEEK, titanium<br>Standard biocompatible flow cell: Fused silica, PEEK<br>Semi-micro biocompatible flow cell: MP35N, titanium, fused silica, PTFE, PEEK | | |
| Safety features | Power-up diagnostics of optics, cooling fans, motors and electronics. Leak detection and safe leak handling. | | |
| PC connection | USB 2.0; 3-port HUB to connect additional Vanquish modules | | |
| GLP | Predictive performance functions for scheduling maintenance procedures based on the actual operating and usage conditions of the detector: lamp age and ignitions (UV lamp and VIS lamp), lamp intensity degradation (UV lamp and VIS lamp), leak detection, service monitoring period. All system parameters logged in the Chromeleon CDS Audit Trail. | | |
| Environmental conditions | Operation: 5–35 °C, 20–80% RH (non condensing), max. 2000 m above sea-level<br>Storage: -20–45 °C, max. 60% RH (non condensing) | | |
| Power requirements | 100–240 VAC, 50/60 Hz, max. 245 W/255 VA | | |
| Dimensions (h × w × d) | 159 mm × 420 mm × 620 mm (6.3 in. × 16.5 in. × 24.4 in.) | | |
| Weight | 16 kg (35 lbs) | | |

## Ordering information

| Description | Part number |
|---|---|
| Diode Array Detector HL | VH-D10-A |
| Diode Array Detector FG | VF-D11-A-01 |
| Diode Array Detector CG | VC-D11-A-01 |
| Multiple Wavelength Detector CG | VC-D12-A-01 |
| **Accessories for Diode Array Detectors HL** | |
| Standard LightPipe flow cell, biocompatible (2 µL, 10 mm, 6 MPa, fused silica) | 6083.0100B |
| High sensitivity LightPipe flow cell, biocompatible (13 µL, 60 mm, 6 MPa, fused silica) | 6083.0200B |
| LightPipe diagnostic cell | 6083.0300 |
| Deuterium lamp (UV) | 6083.1110 |
| Flushing and injection kit for LightPipe flow cells | 6083.4200 |
| Back-flush kit for LightPipe flow cells | 6083.4210 |
| Overpressure relief valve (6 MPa) | 6083.9260 |
| DAC extension board | 6083.0900 |
| **Accessories for Diode Array Detectors FG and CG and the Multiple Wavelength Detectors CG** | |
| Standard flow cell (13 µL, 10 mm, 12 MPa, SST) | 6083.0510 |
| Standard flow cell, biocompatible (13 µL, 10 mm, 5 MPa, PEEK) | 6083.0540 |
| Semi-analytical flow cell (5 µL, 7 mm, 12 MPa, SST) | 6083.0520 |
| Semi-micro flow cell (2.5 µL, 7 mm, 12 MPa, SST) | 6083.0530 |
| Semi-micro flow cell, biocompatible (2.5 µL, 7 mm, 12 MPa, titanium) | 6083.0550 |
| Diagnostic cell | 6083.0570 |
| Deuterium lamp (UV) | 6083.1111 |
| Tungsten lamp (VIS) | 6083.2000 |
| Flushing and injection kit for flow cells | 6078.4200 |
| DAC extension board | 6083.0900 |

Find out more at **thermofisher.com**

ThermoFisher SCIENTIFIC

©2019 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific and its subsidiaries. This information is presented as an example of the capabilities of Thermo Fisher Scientific Inc. products. It is not intended to encourage use of these products in any manners that might infringe the intellectual property rights of others. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details. **PS73047-EN 1020S**