



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.

## 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) 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 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 Tungsten lamp	Deuterium lamp 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 (including 3D acquisition)	Up to 125 Hz (including 3D acquisition)	Up to 125 Hz
Noise	<±6 µAU at 254 nm		
Drift	<1 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) 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 Standard biocompatible flow cell: Fused silica, PEEK 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 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
<b>Accessories for Diode Array Detectors HL</b>	
Standard LightPipe flow cell, biocompatible (2 $\mu$ L, 10 mm, 6 MPa, fused silica)	6083.0100B
High sensitivity LightPipe flow cell, biocompatible (13 $\mu$ L, 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
<b>Accessories for Diode Array Detectors FG and CG and the Multiple Wavelength Detectors CG</b>	
Standard flow cell (13 $\mu$ L, 10 mm, 12 MPa, SST)	6083.0510
Standard flow cell, biocompatible (13 $\mu$ L, 10 mm, 5 MPa, PEEK)	6083.0540
Semi-analytical flow cell (5 $\mu$ L, 7 mm, 12 MPa, SST)	6083.0520
Semi-micro flow cell (2.5 $\mu$ L, 7 mm, 12 MPa, SST)	6083.0530
Semi-micro flow cell, biocompatible (2.5 $\mu$ L, 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

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