HPLC

# Vanquish Access HPLC system

## Stable, start to finish

The Thermo Scientific™ Vanquish™ Access HPLC system is a fit-for-purpose instrument designed with features essential for routine analysis. With leading robustness and tools to ensure correct operation the Vanquish Access HPLC system delivers stable, worry-free performance you can depend on when performing your vital work. In addition, the system integrates with the latest but also several previous Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS) software versions sparing the need to upgrade the CDS.

| Essential system specifications | |
|---|---|
| **Pressure range** | 2–50 MPa (20–500 bar, 290–7,250 psi) |
| **Flow range (settable)** | 0.001–10 mL/min, in 1 µL/min increments |
| **pH range** | 1–13 |
| **Buffer concentration** | 1 mol/L or less, chloride concentration up to 0.1 mol/L |
| **Normal-Phase compatible** | Yes |
| **Biocompatible** | No |
| **Dwell volume** | Default: 937 µL, tunable between 912–1,142 µL with 100 µL sample loop (default configuration) |
| **Method transfer capability** | Sampler freely tunable to contribute additional system gradient delay volume from 0 to 230 µL |
| **Pump type** | Quaternary |
| **Sample thermostatting** | Yes |
| **Column capacity** | 2 × max. 300 mm with pre-heater or guard column, max. column ID: 10 mm |
| **Detector type** | Variable Wavelength Detector |
| **GLP** | Predictive performance functions for scheduling maintenance procedures based on the actual operating and usage conditions. All system parameters logged in the Thermo Scientific™ Chromeleon™ Chromatography Data System Audit Trail. |
| **Informatics compatibility** | • Chromeleon 7.2.10 MUd Chromatography Data System (CDS) and later<br>• Chromeleon 7.3.1 CDS and later<br>• Chromeleon 7.3.2 CDS and later |
| **Environmental conditions** | Operation: 5–35 °C; 20–80% RH (non condensing), max. 2,000 m above sea-level,<br>Storage: -20–45 °C max. 60% RH (non condensing) |
| **Dimensions (h × w × d)** | 820 × 550 × 620 mm (32 × 21.6 × 24.4 in.) |
| **Weight** | Approx. 75 kg (165 lbs) |

| Quaternary pump specifications | |
|---|---|
| **Operating principle** | Serial dual-piston pump |
| **Flow range (settable)** | 0.001–10 mL/min, in 1 µL/min increments |
| **Pressure range** | 2–50 MPa (20–500 bar, 290–7,250 psi)<br>With a flow rate above 5 mL/min, the pressure range decreases linearly down to 30 MPa (300 bar, 4,350 psi) |
| **Compressibility compensation** | Fully automated, independent of the composition of the mobile phase |
| **Flow accuracy** | ±0.1% |
| **Flow precision** | < 0.05% RSD or < 0.01 min SD, whichever is greater |
| **Pulsation** | Typically < 1.0% or < 0.2 MPa, whichever is greater |
| **Gradient formation** | Low-pressure gradient proportioning |
| **Proportioning accuracy** | ±0.5% of full-scale;<br>±1.0% (of full-scale) for other combinations than AB |
| **Proportioning precision** | < 0.15% SD |
| **Number of solvent lines** | 4 |
| **Mixer volume** | 400 µL |
| **Dwell volume (contribution of the pump to the system gradient delay volume)** | 679 µL |
| **Solvent degassing** | Built-in, default: 2 channels (A & B), optional extension to 4 channels (A, B, C & D) |
| **Wetted parts** | Stainless steel, titanium, ceramics, sapphire, PEEK, carbon-fibre filled PTFE, fluoropolymers |
| **Safety features** | Leak detection and safe leak handling, excess pressure monitoring |
| **PC connection** | USB 2.0; 3-port-HUB |
| **I/O interfaces** | 2 × 6 pin Mini-DIN connectors each having functionality:<br>1 input, 1 relay out, 1 bidirectional input/output |
| **Power requirements** | 100–240 V AC, 50/60 Hz, max. 245 W/255 VA |

| Sampler specifications | |
|---|---|
| **Operating principle** | Split loop injection |
| **Pressure range** | 2–50 MPa (20–500 bar, 290–7,250 psi) |
| **Injection volume range** | Default: 0.01–100 µL, min. step = 0.01 µL,<br>Optional: 0.01–250 µL, up to 1,000 µL with multidraw option, min. step 0.025 µL |
| **Injection volume accuracy** | Typically ±0.5% at 50 µL and ±1% at 10 µL water |
| **Injection volume precision** | < 0.25% area RSD for 3 µL (caffeine in water),<br>Typically < 0.5% area RSD for 1 µL (caffeine in water) |
| **Injection linearity** | r > 0.99999 (caffeine in water) |
| **Injection cycle time** | Down to 8 s depending on separation conditions |
| **Minimum sample required** | 2 µL at 1 µL injection volume |
| **Carry over** | < 0.002% with caffeine (typically: < 0.0004%) |
| **Needle wash (external)** | 1 solvent per injection unit, dip rinse and continuous rinse |
| **Sample compartment temperature range** | 4–40 °C (≥ 23 °C below ambient at < 80% RH) |
| **Sample temperature accuracy** | -2 °C /+4 °C |
| **Sample temperature stability** | ±1 °C |
| **Dwell volume (contribution of the sampler to the system gradient delay volume)** | 255 µL with 100 µL sample loop (default configuration);<br>124 µL with sample loop of 10 µL |

| Sampler specifications (continued) | |
|---|---|
| **Method Transfer capability** | Sampler freely tunable to contribute additional system gradient delay volume from 0 to 230 µL |
| **Sample capacity** | Any four of the following (SBS footprint)<br>• 54 × 12 mm OD vials (≤ 1.5 mL) (4× included in shipment)<br>• 96 × 6, 7, and 8 mm OD vials (≤ 1.2 mL)<br>• 16 × 15 mm OD vials (≤ 4 mL)<br>• 9 × 22.5 mm OD vials (≤ 10 mL)<br>• Well plates (96 and 384, deep and shallow) + capacity of 12 × 22.5 mm OD vials (≤ 10 mL) in the carousel |
| **Automation features barcode reading** | Barcode reading:<br>• Empty segment detection<br>• Rack/well plate verification<br>• Inventory management |
| **PC connection** | USB 2.0; 3-port-HUB |
| **I/O interfaces** | 2 × 6 pin Mini-DIN connectors each having functionality: 1 input, 1 relay out |
| **Safety features** | Leak detection and safe leak handling |
| **Wetted parts** | Sample flow path: Stainless steel, titanium, DLC, PEEK, PE-UHMW<br>Eluent flow path: Stainless steel, titanium, DLC, PEEK, PE-UHMW, sapphire<br>Wash liquid flow path: PP, PE, FFPM, FFKM, PEEK, PA, PK, PTFE |
| **Power requirements** | 100–240 V AC, 50/60 Hz, max. 215 W/ 225 VA |

| Column compartment specifications | |
|---|---|
| **Operating principle** | Still air |
| **Temperature range** | 5–85 °C in 0.1 °C increments (18 °C below ambient) |
| **Temperature stability** | ±0.05 °C |
| **Temperature accuracy** | ±0.5 °C (up to 80 °C) |
| **Heating performance** | From 20 °C to 50 °C (±1 °C) in < 15 min<br>From 25 °C to 40 °C (±1 °C) in 5 min |
| **Cooling performance** | From 50 °C to 20 °C (±1 °C) in < 15 min |
| **Capacity** | 2 column slots |
| **Column slot dimension** | 387 mm × 25 mm |
| **Column capacity** | 2 × max. 300 mm with pre-heater or guard column, max. column ID: 10 mm |
| **Valves** | 1 optional valve: 2-position/6-port, 6-position/7-port |
| **Pre-heater** | Yes, passive |
| **Post-column cooler** | No |
| **Pressure range** | 2–50 MPa (20–500 bar, 290–7,250 psi) |
| **Safety features** | 2 doors, fluid leak sensors, fast-cool button |
| **PC** | USB 2.0 |
| **Wetted parts** | Titanium, PEEK, stainless steel |
| **Power requirements** | 100–240 V AC, 50/60 Hz, max. 202 W/ 326 VA |

| Variable Wavelength Detector specifications | |
|---|---|
| **Optical design** | UV/VIS/NIR photometer (tunable Czerny-Turner monochromator) with additional internal reference beam |
| **Light source** | Deuterium lamp<br>Tungsten lamp (optional) |
| **Wavelength range** | 190–700 nm (with deuterium and tungsten lamp) |
| **Spectral bandwidth** | 6 nm at 254 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 glass filter |
| **Number of signal channels** | Up to 2 |
| **Data collection rate (single-channel)** | Up to 100 Hz |
| **Data collection rate (multi-channel)** | Up to 5 Hz |
| **Noise (single-channel)** | < ±2.5 µAU at 254 nm |
| **Noise (multi-channel)** | < ±10 µAU (typical < ±7 µAU) at 254 nm and 280 nm |
| **Drift** | < 0.1 mAU/h at 254 nm |
| **Linearity** | < 5% at 2.5 AU (typical < 3% at 2.5 AU) |
| **Flow cell** | Included in system: Standard flow cell (11 µL, 10 mm, 12 MPa, SST) |
| **Flow cell pressure limit** | 12 MPa (120 bar, 1,740 psi) |
| **Wetted parts** | Fused silica, PEEK, PTFE, stainless steel, titanium |
| **Safety features** | Power-up diagnostics of optics, cooling fans, motors, and electronics.<br>Leak detection and safe leak handling. |
| **PC connection** | USB 2.0; 3-port HUB |
| **I/O interfaces** | 2 digital 6 pin mini-DIN connectors |
| **Power requirements** | 100–240 V AC, 50/60 Hz, max. 245 W/ 255 VA |

## Ordering information

| Description | Part number |
|---|---|
| Vanquish Access Quaternary HPLC System | VA-S22-A-01 |
| **Sampler accessories** | |
| Sample loop, 10 µL, SST | 6851.1960 |
| Sample loop, 25 µL, SST | 6851.1940 |
| Sample loop, 250 µL, SST | 6851.1970 |
| Sample loop, 1,000 µL, SST | 6851.1980 |
| Sample rack, 9 pos, 22.5 mm OD vials | 6851.1020 |
| Sample rack, 16 pos, 15 mm OD vials | 6851.1030 |
| Sample rack, 96 pos, 6 mm OD vials | 6850.1026 |
| Sample rack, 96 pos, 7 mm OD vials | 6850.1030 |
| Sample rack, 96 pos, 8 mm OD vials | 6850.1034 |
| **Column compartment accessories** | |
| 2-position/6-port column switching valve (70 MPa), SST | 6230.1520 |
| 6-position/7-port column switching valve (70 MPa), SST | 6230.1530 |
| Method transfer kit, extending the tunable gradient delay volume up to 430 µL | 6190.2110 |
| **Detector accessories** | |
| Tungsten lamp (VIS) | 6074.2000 |
| Flushing and injection kit for flow cells | 6078.4200 |

Learn more at **thermofisher.com/vanquishaccess**


**PS002711-EN 0524M**