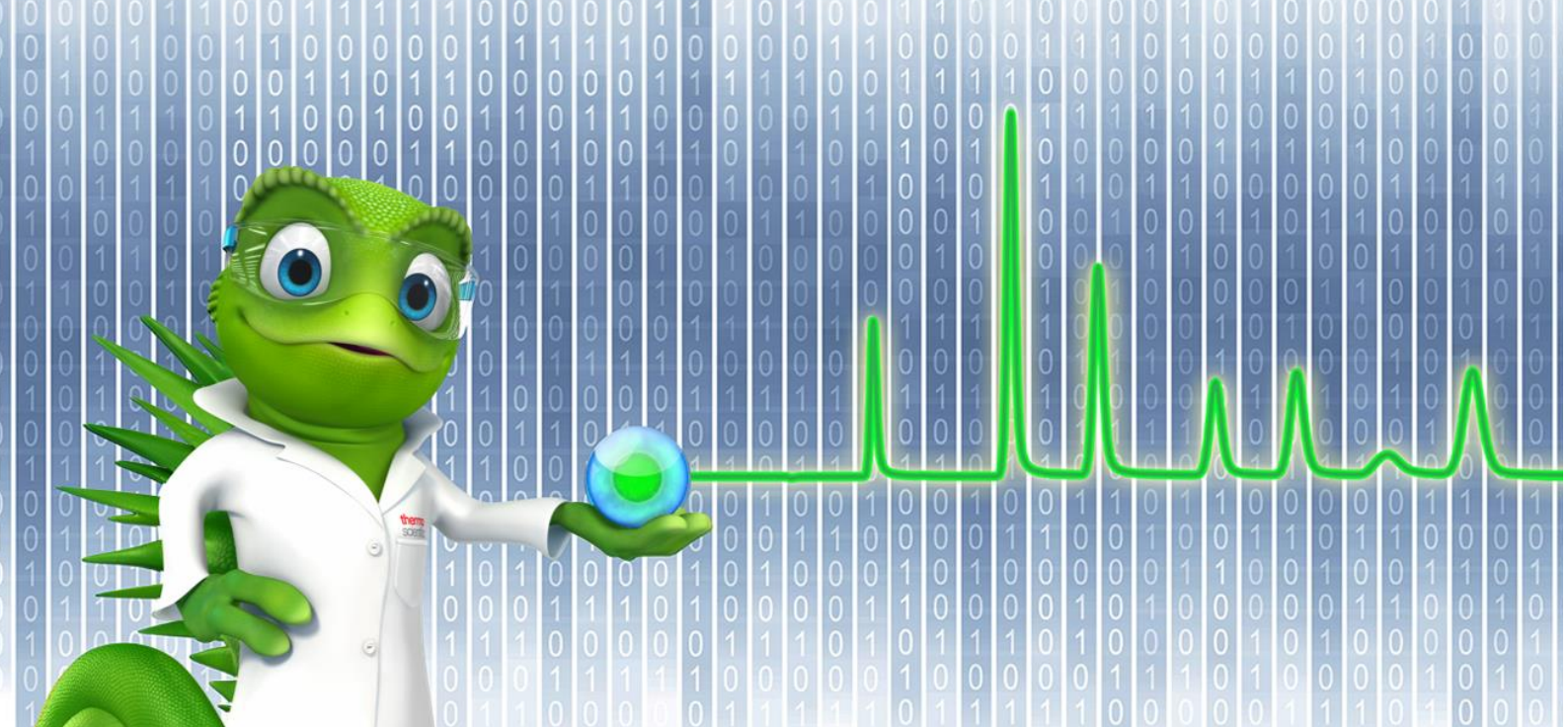




thermoscientific

Release Notes

Vanquish Neo System Driver

Software Version 1.5 • September 2024

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1 About this Release Notes

These Release Notes describe the functional features and operating principles of the Thermo Scientific™ Chromeleon™ Vanquish™ Neo system driver and provide instructions for installation, configuration, and operation of the driver and additional software.

These Release Notes are intended as a supplementary document to the other Operating Manuals and Installations Guides provided with the instrument.

2 Introduction

The Vanquish Neo driver package version 1.5 is a zip file that includes the Vanquish Neo system driver including all required firmware versions to update the system to the latest versions.

The Vanquish Neo system driver is a new generation of driver that provides control over the entire Thermo Scientific™ Vanquish Neo UHPLC system with a single driver package.

2.1 Supported Data Systems

The following versions of Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS):

- Chromeleon 7.2.10 MUE or higher
- Chromeleon 7.3.1 or higher
- Chromeleon 7.3.2 MUa or higher

The following versions of Thermo Scientific™ Standard Instrument Integration (SII) for Xcalibur™:

- SII for Xcalibur, version 1.7 or higher

For information of supported Xcalibur versions, please refer to the Release Notes of SII for Xcalibur.

2.2 Other Documentation

The following documents have been updated with this release:

- Online Help (distributed with this release)
- [Vanquish Neo User Guide](#) (revision 2.0, distributed with this release)

Please refer to the Chromeleon and SII for Xcalibur **Installation Guides** for information regarding:

- System Requirements
- Required Third-Party Software
- Compatibility with Previous Versions
- Installing and Configuring the Chromeleon Software

Refer to the Chromeleon and SII for Xcalibur **Supported Operating Systems** document for information regarding:

- Supported Operating Systems
- Supported Databases

Refer to the **operating manuals and guides** for detailed hardware information:

- Vanquish Neo System Operating Manual
- Vanquish User Interface Installation Guide

2.3 Installation

Before installing the instrument firmware or driver, verify that Chromeleon or SII for Xcalibur is installed using one of the following Installation Guides:

Installation Guide – Chromeleon 7.2.10 MUx.pdf

Installation Guide – Chromeleon 7.3.1 MUx.pdf

Installation Guide – Chromeleon 7.3.2 MUx.pdf

Installation Guide – SII for Xcalibur

IMPORTANT NOTICE When installing the Vanquish System Device Driver Package 1.5 on a system where an older version of this driver is already installed, the previous version must be **uninstalled** manually before installation of version 1.5.

To install the Vanquish Neo driver, run the following program from the distributed installer package:

1. *Thermo.Chromeleon.Vanquish.Neo.Driver.1.5.msi*

2.4 Supported Instruments/Modules/Devices

The driver supports Vanquish Neo systems (VN-S10-A) consisting of:

- a Vanquish Binary Pump N (VN-P10-A)
- a Vanquish Split Sampler NT (VN-A10-A),
- a Vanquish User Interface (Vanquish System Controller (VSC, 6036.1130-01) + Vanquish Display (6036.1180)),
- an optional Vanquish Column Compartment N (VN-C10-A) with one or two optional low-dispersion valves, 2p-6p, VN-C (P/N 6250.1520).
- an optional second Binary Pump N module.

All modules must be connected to each other via System Interlink cabling. Please refer to the operating manuals for more information. If a Vanquish User Interface (Vanquish UI) is present, it can be operated via the touch screen interface Vanquish Display or via a web browser connecting to the VSC via the instrument LAN.

Before using the drivers, make sure that the pump module is connected via USB to the instrument PC, and make sure that the Vanquish UI is connected to the instrument PC via a properly configured LAN connection. Details on how to connect the pump module can be found in the corresponding User Manual and how to connect and set up TCP/IP for the VUI are provided in the Installation Guide that has been released for the Vanquish UI.

3 How to configure a Vanquish Neo UHPLC system

1. Open the Chromeleon Services Manager and start the Instrument Controller (if not started automatically on system start).

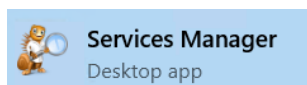


Figure 1: Service Manager application

2. Open the Chromeleon Instrument Configuration Manager and add or select an instrument. For Xcalibur /SII for Xcalibur installations, open Xcalibur Instrument Configuration, select SII for Xcalibur and configure a new instrument (Figure 2).

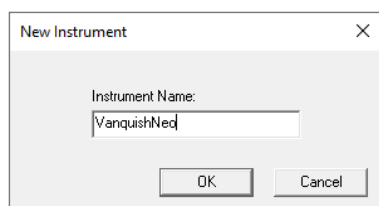


Figure 2: New instrument

3. Add a new module and select HPLC: Vanquish followed by Vanquish Neo System. Enter the Vanquish System Controller IP address (Figure 3). The IP address of the Vanquish Neo system can be displayed and modified on the Vanquish UI – Settings Panel – Connectivity. For details, please refer to the Vanquish UI release notes and user manual.

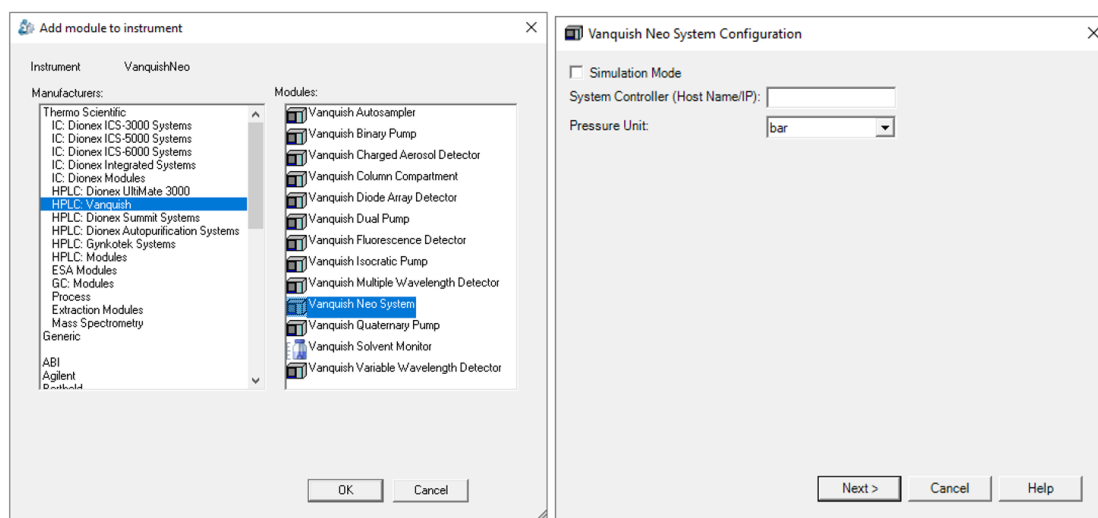


Figure 3: Add new module to the instrument and set the system controller IP address

- After the IP address is entered and the system was successfully connected to the instrument control PC, the configured modules of the Vanquish Neo system are displayed (Figure 4).

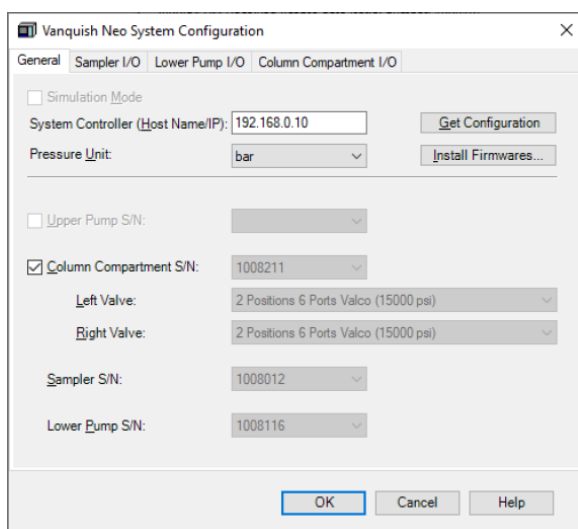


Figure 4: Vanquish Neo system and connected modules

NOTICE Using Vanquish Neo systems consisting of two Binary Pump N modules to support e.g. the Tandem Direct Injection workflow, please make sure the two pumps are correctly assigned with their module serial numbers as either Separation (Upper) Pump or Reconditioning (Lower) Pump first in the Vanquish UI and then applied to the Instrument Configuration.

- Optional: Add a Vanquish Variable Wavelength Detector to the instrument. Choose HPLC: Vanquish followed by the respective detector type. For Chromeleon LC-MS installations also add the mass spectrometer to the instrument. For Thermo Xcalibur installations add the mass spectrometer following the instructions in Thermo Xcalibur Data Acquisition and Processing User Guide.
- Save the configuration and launch Chromeleon. For Thermo Xcalibur/SII for Xcalibur installations open Xcalibur.

NOTICE For all Xcalibur related topics, please follow the respective instructions in the Xcalibur Data Acquisition and Processing User Guide and the Xcalibur Qual Browser User Guide.

4 How to update firmware versions

The driver package contains the latest driver and a set of firmware for pump, autosampler, column compartment and system controller which was tested to work together on an instrument and is compatible with the driver. If new firmware versions are available, it is **mandatory** to update them following the instructions below (Figure 5).

The **Vanquish Neo System Driver package version 1.5** contains the following driver and firmware versions:

Module	Version <i>(Change compared to version 1.4)</i>
Vanquish Neo System Driver	1.5.0.1748 <i>(new*)</i>
Vanquish System Controller Embedded Software	2.4.0.63998 <i>(new)</i>
Vanquish Neo Split Sampler NT (VN-A10-A) Firmware	2.50 <i>(new)</i>
Vanquish Neo Binary Pump N (VN-P10-A) Firmware	2.50 <i>(new)</i>
Vanquish Neo Column Compartment N (VN-C10-A) Firmware	2.50 <i>(new)</i>

* This driver version now adopts a new versioning scheme that aligns with the version format of the driver package.

Open the configured Vanquish Neo system in the Chromeleon Instrument Configuration Manager and select the option “Install Firmware”. The currently installed firmware versions on the individual modules are then compared with the firmware versions part of the installed driver package.

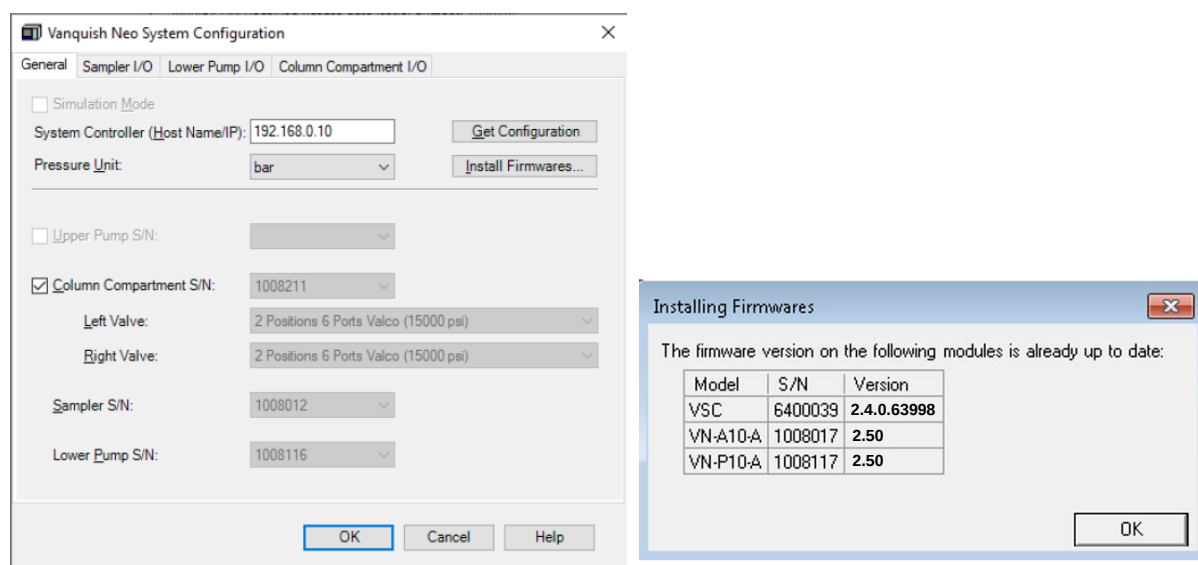


Figure 5: Vanquish Neo system configuration and firmware update tool

NOTICE There is no option to select a single module for upgrading the firmware, all modules for which a newer version is available are updated.

5 Supported Workflows

The Vanquish Neo UHPLC system is shipped with standardized and optimized fluidic configurations and includes all system capillaries to support nano, capillary and micro flow applications for direct injection and trap-and-elute workflows.

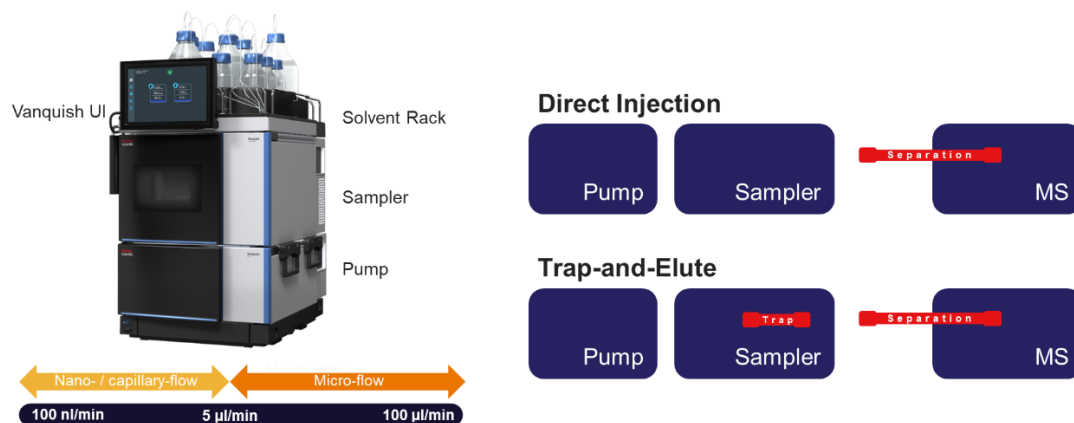


Figure 6: Supported Workflows for Vanquish Neo UHPLC system

To enable the option of thermostating linear columns, a Vanquish Column Compartment N (VN-C10-A) has to be added to the system. To support the heated trap-and-elute workflow a low dispersion 2-position 6-port valve (e.g. Valve 2p-6p, Low-Dispersion, 150 MPa, bio, VN-C; P/N 6250.1520) has to be installed in the left or right port of the Column Compartment. The required capillaries to support the workflows including the Column Compartment are also part of the system ship kit and do not need to be purchased separately.

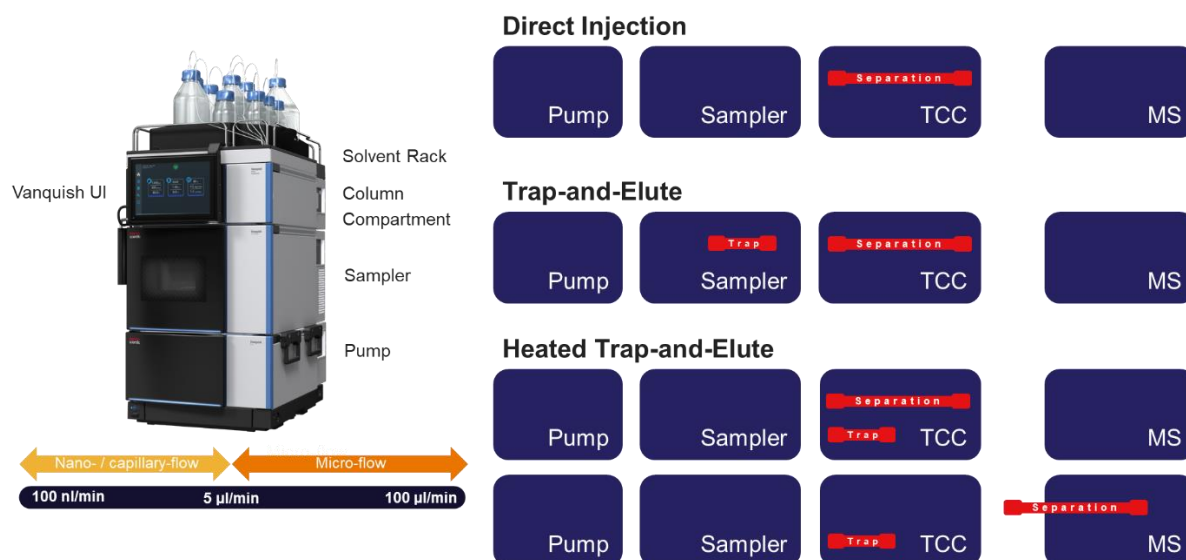


Figure 7: Supported workflows for Vanquish Neo UHPLC system with Column Compartment and with equipped left or right column compartment valve. **Notice:** Using the Direct Injection or Trap-and-Elute workflow, the separation column can be also placed directly at the MS without using the TCC. For simplification these options are not shown in this figure.

To enable the Tandem Direct Injection workflow, a Vanquish Column Compartment N (VN-C10-A) with two low dispersion 2-position 6-port valves (P/N 6250.1520) and a second Binary Pump N (VN-P10-A) module need to be added to the configuration. The required capillaries to support the Tandem Direct Injection workflow are included in the Tandem Workflow Kit, Vanquish Neo (P/N 6250.1030). This kit is a mandatory requirement to support the Vanquish Neo Tandem Direct Injection workflow and needs to be purchased separately.

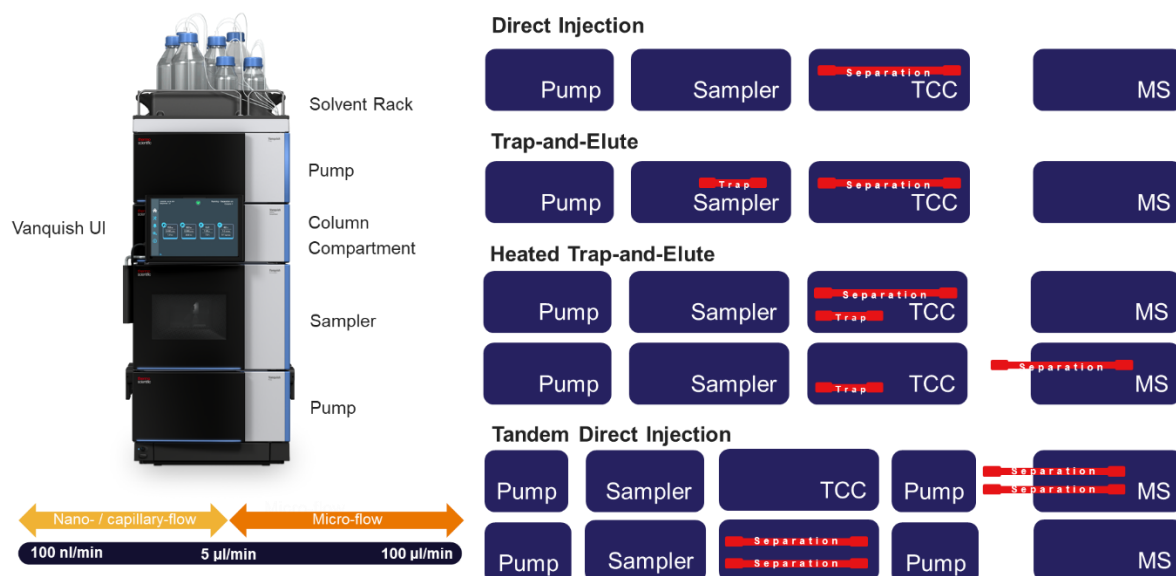


Figure 8: Supported workflows for a Vanquish Neo UHPLC system with Column Compartment with two switching valves and a second pump module. Notice: Using the Direct Injection or Trap-and-Elute workflow, the separation column can be also placed directly at the MS without using the TCC. For simplification these options are not shown in this figure.

The Vanquish Neo ship kit includes following capillaries, columns, and consumables to support the standardized workflows (Figure 6 and figure 7)

Description	P/N	Qty
PepMap 100 C18 Column, 5µm, 0.3x5mm, 1500 bar (3 pcs.)	174500	1
Trap Column Cartridge Holders with nanoViper Fittings	174502	1
Union Viper	6040.2304	1
Nano LC column to MS tubing IDxODxL 20µm x 280µm x 1m	6041.5292	1
Capillary LC column to MS tubing IDxODxL 50µm x 280µm x 1m	6041.5294	1
Fused Silica Tubing, IDxOD 20µm x 280µm, 1.5m	n/a	1
Fused Silica Tubing, IDxOD 50µm x 280µm, 1.5m	n/a	1
nanoViper Capillary IDxL 20µm x 550mm	6250.5260	2
nanoViper Capillary IDxL 50µm x 350mm	6250.5540	1
nanoViper Capillary IDxL 50µm x 550mm	6250.5560	4
Viper plug titanium	6040.2303	3
Vial w. glass insert and cap, 32x11.6mm (100 pcs.)	6PK1655	1
Cytochrome C digest test sample	161089	1

NOTICE The ship kit also includes tools, cables and other items which are not listed in the table above.

Contents of Tandem Workflow Kit, Vanquish Neo (P/N 6250.1030). This kit is a mandatory requirement to support the Vanquish Neo Tandem Direct Injection workflow (Figure 8).

Description	P/N	Qty
NanoViper Capillary IDxL 20µm x 150mm	6250.5121	3
NanoViper Capillary IDxL 20µm x 450mm	6250.5250	2
NanoViper Capillary IDxL 20µm x 550mm	6250.5260	1
Low Dispersion Y-piece 50µm w. insert	6250.1009	2
Viper Plug	6040.2303	2
Ferrule and fitting kit SR/FS-7	6822.0012	2
PEEK sleeves for fused silica tubing 360µm	6720.0078	2
NanoViper Capillary IDxL 50µm x 450mm	6250.5550	2
NanoViper Capillary IDxL 50µm x 150mm	6250.5124	5
Cytochrome C digest test sample	756.161089	1
Flow Scheme Vanquish Neo Tandem	4822.5012	1
Set Color Sticker Vanquish	5036.2005	1
Acclaim™ PepMap 100 C18 1 mm x 15 cm column (2 µm dp) micro flow IQ columns	164711	2

6 Direct Control

The Vanquish Neo system can be controlled directly either via the system ePanel in the Chromeleon Console or via the direct control option in Xcalibur (Figure 8).

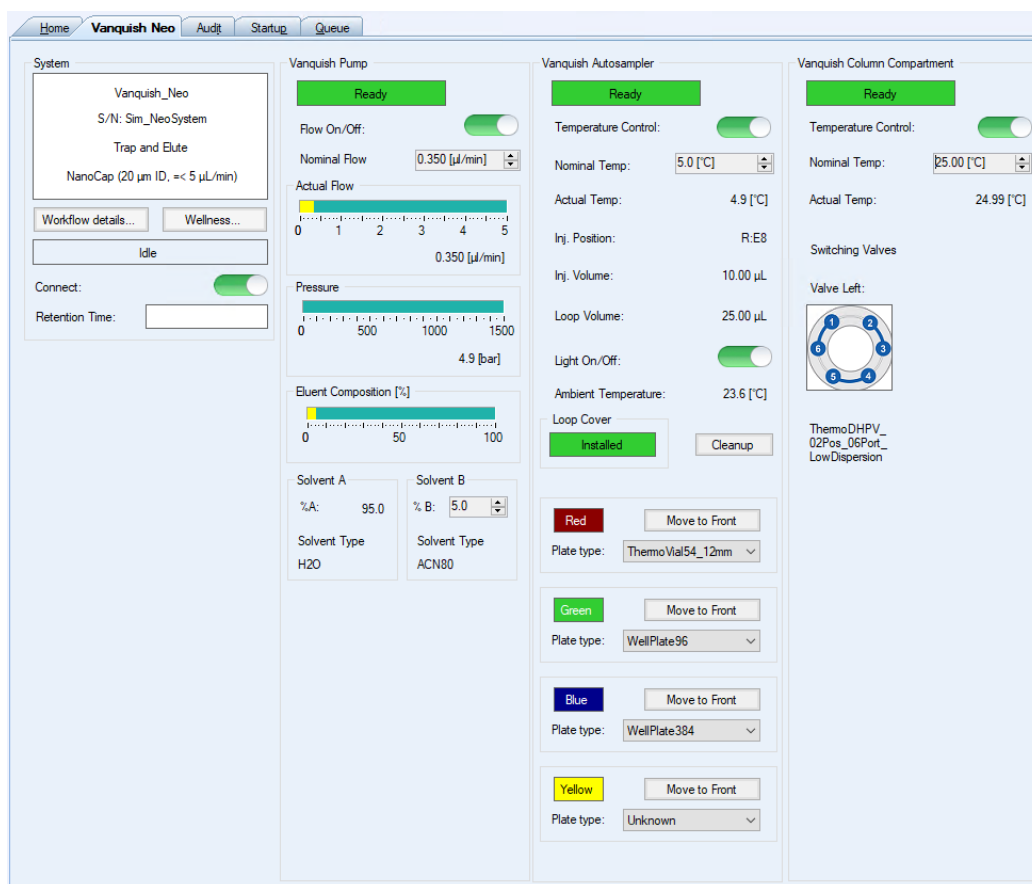


Figure 8: Vanquish Neo system ePanel. Please note the appearance of the ePanel will change based on the used modules/workflow of the configured instrument.

Alternatively, the system can be also controlled using the Vanquish UI and the direct control option on the Home Panel (Figure 9). For this use case a connection to the instrument control PC is not required. Please refer to the Vanquish UI release notes and the Vanquish Neo User Guide for details.

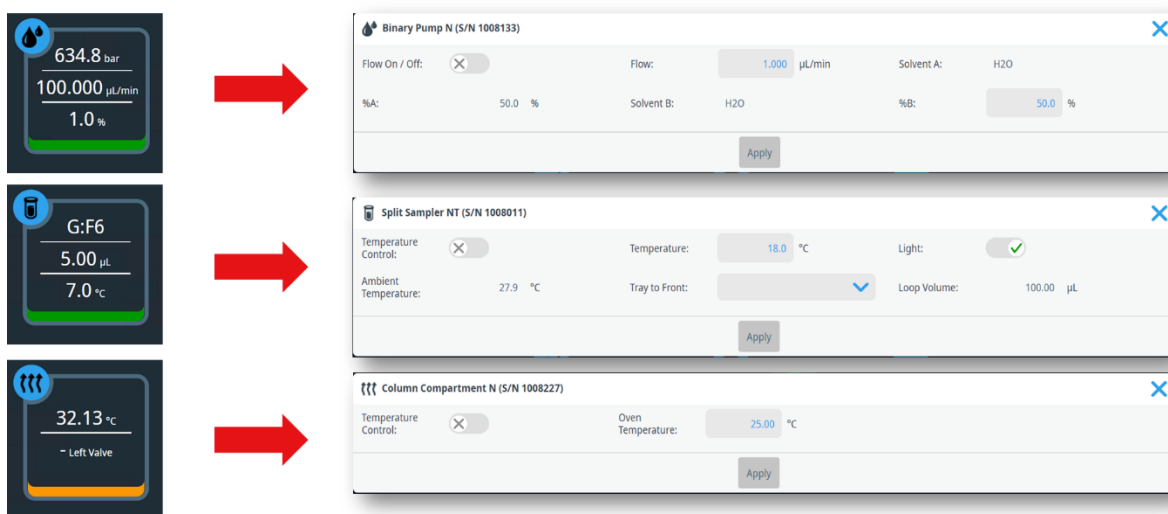


Figure 9: Vanquish Neo direct control option on Vanquish UI

7 Instrument Method Wizard and Editor

The Vanquish Neo Instrument Method Wizard/Editor is the interface for the user to create new methods and change existing ones. An instrument method contains the control commands that are executed by the system when running an analysis. The tool used to create an instrument method is the Instrument Method Wizard; the tool used to view and modify methods is the Instrument Method Editor. For details please refer to the [Vanquish Neo User Guide](#).

8 Resolved Issues and New Features

This chapter describes all new features and issues that have been resolved with the release of the Vanquish Neo System Driver 1.5 compared to the previous version 1.4.

The numbers in the first column of the table below refer to the Thermo Fisher Scientific tracking IDs.

ID	Description
44222	Support Vanquish Neo Tandem Direct Injection Workflow
171178	Vanquish Neo Heated Trap-and-Elute workflow, support to configure/use the right Column Compartment switching valve
120875	Suppress setting the pump pressure limits as long as a VSC script is running
166190	Pressure Unit [MPa] is not applied correctly for Column settings
168590	Do not allow FW installation when a possibly changed configuration has not been saved yet
214723	Loading Volume logged in Audit Trail is incorrectly rounded
242107	Time Zone setting is not synchronized with VSC
248979	SII for Xcalibur: ePanel button to open "Not Ready Cause" asks for Take Control
257825	Inject command to be executed manually disabled
343611	Hardware/firmware revision properties added
350760	Update of Newtonsoft.Json
373552	The use of emergency methods are rejected for Vanquish Neo
379499	DrawSpeed/DispenseSpeed range updated
409891	Daylight saving time glitch fixed
416488	Driver disconnects are not handled as abort errors
418416	Installer runs Station IQ twice on updates
441635	Channel Drop Down Menu in Sequence Wizard Does Not Show All Channels
448241	Handling of disconnects during firmware updates improved
461919	Fix system status inconsistency between VSC UI and driver
462029	Handling of Cleanup and Sequence End improved
486175	Avoid workflow-related properties being changed by the user and could cause issues
459731	Sometimes, the ePanel switches to the "Home" tab without an explicit user interaction.
556226	Restart synchronizing the VSC clock on VSC upgrade
639221	Prevent unintended inventory scans of the autosampler
FWG-6104	Vanquish Column Compartment N - When the max. temperature limit is set lower than the current CC temperature set-point, then this set-point is not reduced to the new max. temperature.
FWG-6943	Update of flow control mechanism (pressure control instead of flow control) for pressurized loop wash to be robust against partially clogged needle seats.

9 Limitations and Known Issues

The Vanquish Neo System Driver 1.5 does not support the following:

- User Defined Programs (UDPs) to customize injection processes with the sampler
- Systems where the stack contains Vanquish detector modules other than a Vanquish Variable Wavelength Detector F/C.
- Vanquish Neo Tandem Trap-and-Elute workflows
- Running injections in an overlapping fashion, i.e. the commands *PrepareThisInjection* and *PrepareNextInjection* outside of the Tandem Direct Injection workflow functionality.
- Operating the Vanquish Neo UHPLC system with a Vanquish Charger Module
- Correct calculation of column void volume for non-cylindric columns
- Column ID tags

Other changes to be considered:

Existing instrument methods created with the Vanquish Neo System Device Driver version 1.4 are fully compatible, with the following exception:

- *DrawSpeed* and *DispenseSpeed* settings of the Autosampler are now restricted to a maximum value of 15 µl/s. Existing instrument methods using higher values need to be adapted.

Changes to behavior outside of injection method runs:

- Emergency methods can no longer be specified for queues on Instruments where the Vanquish Neo System driver is installed (only relevant for Chromeleon CDS users).
- It is no longer possible to manually execute the Inject command on Instruments where the Vanquish Neo System driver is installed. This is a safety measure to avoid this command is interfering with the workflow automatized injection routines.

ID	Description
181143	Instrument Method Editor: Pump grid: Duration cell for first row should be empty
201601	Instrument Method Editor: SII for Xcalibur: Help text not shown on gradient table page
216462	During Cleanup, a wrong overall system status is shown
225122	When inserting a new tray while a sequence is running, it cannot be used immediately in the next injection
643563	Emergency Methods do not work with driver version 1.5 anymore
248741	Instrument Method Editor, Heated Trap-and-Elute workflow: The VnTCC valve pressure limit is not taken into account if a VICI valve is used
249142	When stopping the injection (immediately) during equilibration, in some cases the Cleanup is not executed correctly.
FWG-6670	Split Sampler NT – Repeatable start and stop of cleanup script on VSC can bring sampler to infinitely rotate the tray. If this happens, please restart the module.
FWG-6844	Split Sampler NT – During initialization of a new firmware and during calibration the pressure sensor value is temporarily set to a value of 1000. In very rare cases and if an error occurs exactly in such a state it stays at this interim value what can lead to underestimated pressures and errors like failing leak tests. If this happens, please contact service.
FWG-6104	Vanquish Column Compartment N - When the max. temperature limit is set lower than the current CC temperature set-point, then this set-point is not reduced to the new max. temperature.

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