

# GE Healthcare

## LabAssistant



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### Challenge

GE Healthcare needed a simpler way of running and testing their ÄKTA™ series chromatograph modules. The old test script engine was complicated to use and had only rudimentary functionality.

### Solution

LabAssistant, a turn-key solution based on NI LabVIEW™ that gives a clean tool for using the modules, stand-alone and together, and with a very simple tool for creating and modifying scripts. LabAssistant also includes control of the external multi-instrument ALMEGA, GE's climate chambers and precision scales.

### Introduction

GE Healthcare Life Science develops chromatographs, among which the latest product is the modular ÄKTA series. The customers can design their own ÄKTA system using a number of different modules that work independently of each other. During system development GE Healthcare staff often need to run tests on both individual and interconnected modules.

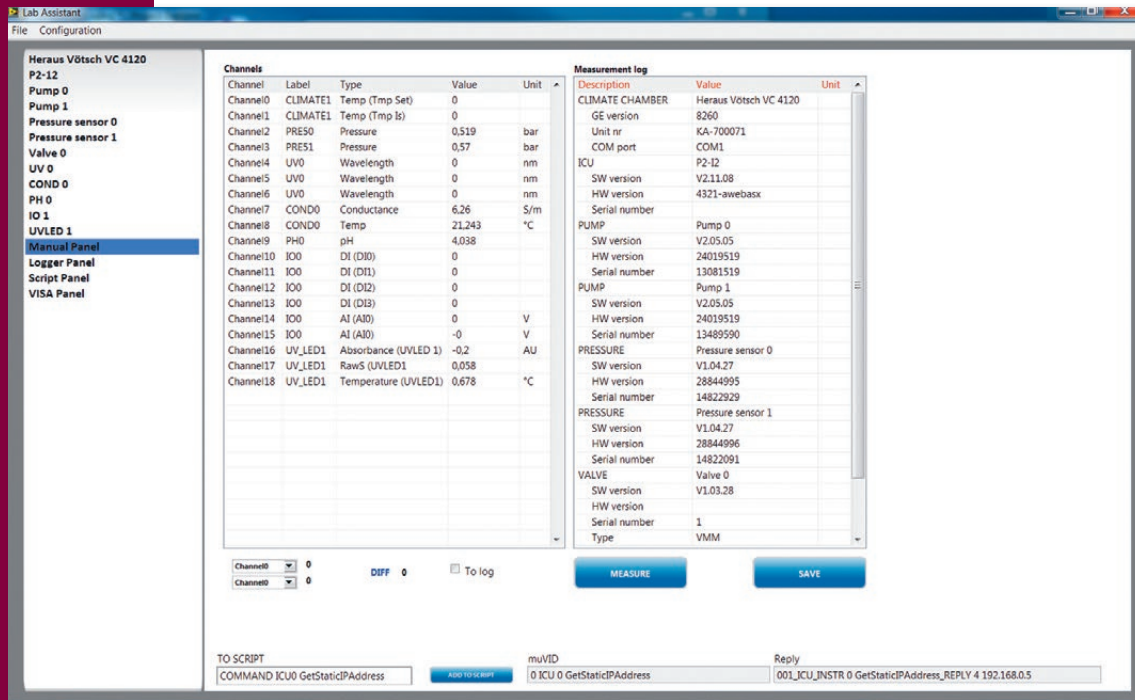
This testing was earlier done with a tool called NextHS, which had the ability to run simple scripts. The setup of the scripts was very complicated and the tester many times didn't have the knowledge of how to make a working script, which added the workload of the few that mastered NextHS. There was a need for a simple tool with a plug-and-play architecture that had an interface for the most common operations of the specific modules. Novator Solutions got the task to develop a LabVIEW application to solve the problem.

### About Novator Solutions

Novator Solutions excels in LabVIEW, and is highly skilled in developing test, measurement, and control systems. As a Gold Alliance Member Novator Solutions works closely with National Instruments, and has extensive experience on NI hardware and software platforms, especially LabVIEW, TestStand™, and VeriStand™. Novator Solutions consultants have more than 100 years of combined experience with these tools.

Novator Solutions work as consultants in the customers' projects or as suppliers of complete turn-key solutions including mechanics, electronics, assembly, installation, maintenance and support.

# The solution – LabAssistant



LabAssistant user interface, showing the manual measure panel

**LabAssistant** is an application developed in the LabVIEW environment. It is based on an object-oriented structure, making it robust and scalable. For communication with the ÄKTA ICU (integrated central unit) a DLL called muVID was developed, which provides an API to the low-level management of the ÄKTA system. LabAssistant is a plug-and-play design that discovers the modules connected to the ICU and configures the application user interface with the corresponding panel.

In the example image above there is a climate chamber, ICU, two pumps, two pressure sensors, two UV sensors, one conductivity sensor, one PH sensor and one multi-purpose IO module configured. There are also panels for manual measurements, logging, script editing and running, and a panel for basic VISA (serial) communication. The system also handles fractionating boxes, precision scales, multi-instruments from ALMEGA,

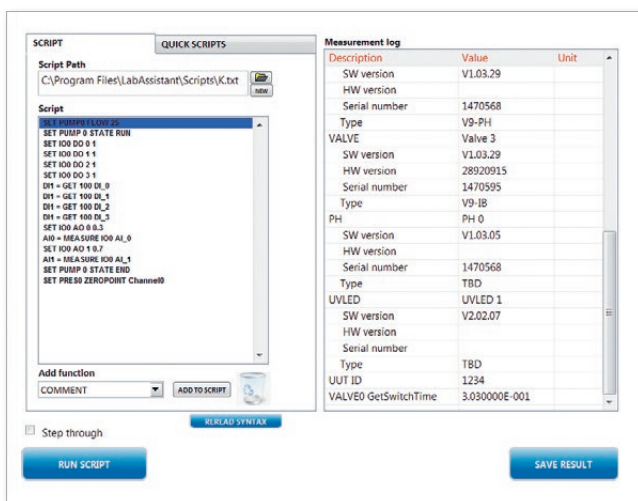
among others. Each panel has buttons and other controls for controlling the unit. After any operation on any of the modules, the corresponding script row can be added to the script simply by pressing the "Add to script" button. Adding loops, case-handling, simple math etc. to the script is as simple. If a new module is plugged in, it automatically configures and appears with its own panel.

## Why LabVIEW?

Why is LabVIEW used for the LabAssistant? Studies show that the developing time is significantly reduced using graphical programming. Novator Solutions uses an object-oriented program design, which results in very robust, modular and easily maintainable code.

# Conclusion

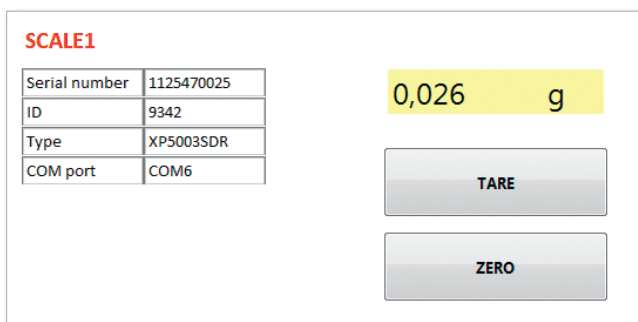
**Developing LabAssistant on the LabVIEW platform** gave a robust solution and a very user-friendly interface for interacting with the ÄKTA modules. The threshold to start using the modules, and to create and modify scripts is very low. There is no longer need for script experts, because every user can easily create their own scripts. The most common functions for each module are implemented in the interface, but there is a possibility to use all the functions available for each module, even if it isn't as simple as using the already provided functions. The use of LabAssistant has started to spread even to other departments.



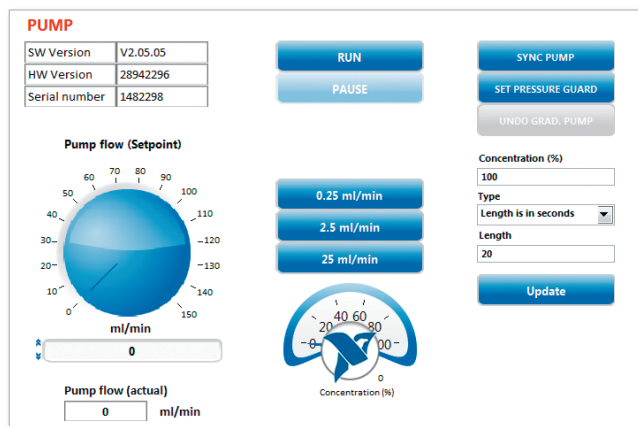
The Script panel



The ALMERA panel (multi-instrument)



The Scale panel



The Pump panel



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