# Static Stack

## Device Driver User Guide

Agilent Technologies

# Notices



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Agilent Technologies

# Letter to our Customers

Dear Customer,

The Agilent Technologies acquisition of Velocity11 resulted in the following changes:

- Creation of Agilent Technologies Automation Solutions, formerly Velocity11
- Renaming of some Velocity11 products
- New Customer Service and Technical Support contact information
- New website address for product information

Please make a note of the following changes as they impact this user guide.

## Velocity11 product name changes

| Velocity11 product name | Changes to ... |
|---|---|
| Access2 Automated Microplate Loader | Automated Centrifuge Loader |
| Element Automation System | BioCel 900 System |
| IWorks Device Driver Programming Interface | VWorks DCL Interface |
| PlatePierce Seal Piercing Station | Microplate Seal Piercer |
| VCode Barcode Print and Apply Station | Microplate Barcode Labeler |
| Velocity11 Robot | 3-Axis Robot |
| VHooks Integration Interface | VWorks Hooks Interface |
| VPrep Pipetting System | Vertical Pipetting Station |
| VSpin Microplate Centrifuge | Microplate Centrifuge |
| VStack Labware Stacker | Labware Stacker |

## New contact information

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# Contents

# Introduction 1

This chapter introduces Velocity11 device drivers and provides some basic procedures that are needed to use them.

A Velocity11 device driver is software that plugs into VWorks or BenchWorks software to allow them to control a specific device.

Before reading this guide, you should be familiar with the VWorks or BenchWorks software user interface. Information about using VWorks or BenchWorks software can be found in the *VWorks Version 3 Automation Control User Guide* or *BenchWorks Automation Control User Guide*.

To set up and use Velocity11 device drivers, become familiar with the content in this guide as well as the guides for the devices that use VWorks or BenchWorks software.

This chapter contains the following topics:

# Who should read this guide

## Job roles

This user guide is for people with the following job roles:

| Job role | Responsibilities |
|---|---|
| Integrator | Someone who writes software and configures hardware controlled by device drivers. |
| Lab manager, administrator, or technician | Someone who is responsible for:<br>❑ Installing device drivers<br>❑ Managing device drivers<br>❑ Developing the applications that are run using device drivers<br>❑ Solving the more challenging problems that might arise<br>❑ Developing training materials and standard operating procedures for operators |
| Operator | Someone who performs the daily production work using the device driver and solves routine problems.<br>Your organization may choose to create its own procedures for operators including the procedures in this guide. |

## Related topics

| For information about... | See... |
|---|---|
| Contacting Velocity11 | http://www.velocity11.com/contact.html |
| Accessing online help | “About Velocity11 user guides” on page 3 |
| Device drivers | “About device drivers” on page 7 |

# About Velocity11 user guides

**About this topic**

This topic describes the different formats of Velocity11 user information and explains how to access the user information.

**Formats available**

Velocity11 user information is provided to you as:

- ❑ Online help
- ❑ A PDF file
- ❑ A printed book

The information in each format is the same but each format has different benefits.

**Where to find user information**

### Online help

The online help is added to your computer with the Velocity11 lab automation system software installation.

### PDF file

The PDF file of the user guide is on the software CD that is supplied with the product.

### Velocity11 website

You can search the online help or download the latest version of any PDF file from the Velocity11 website at www.velocity11.com.

*Note:* All Velocity11 user information can be searched from the website at www.velocity11.com.

**Online help**

The online help is the best format to use when you are working at the computer and when you want to perform fast or advanced searches for information.

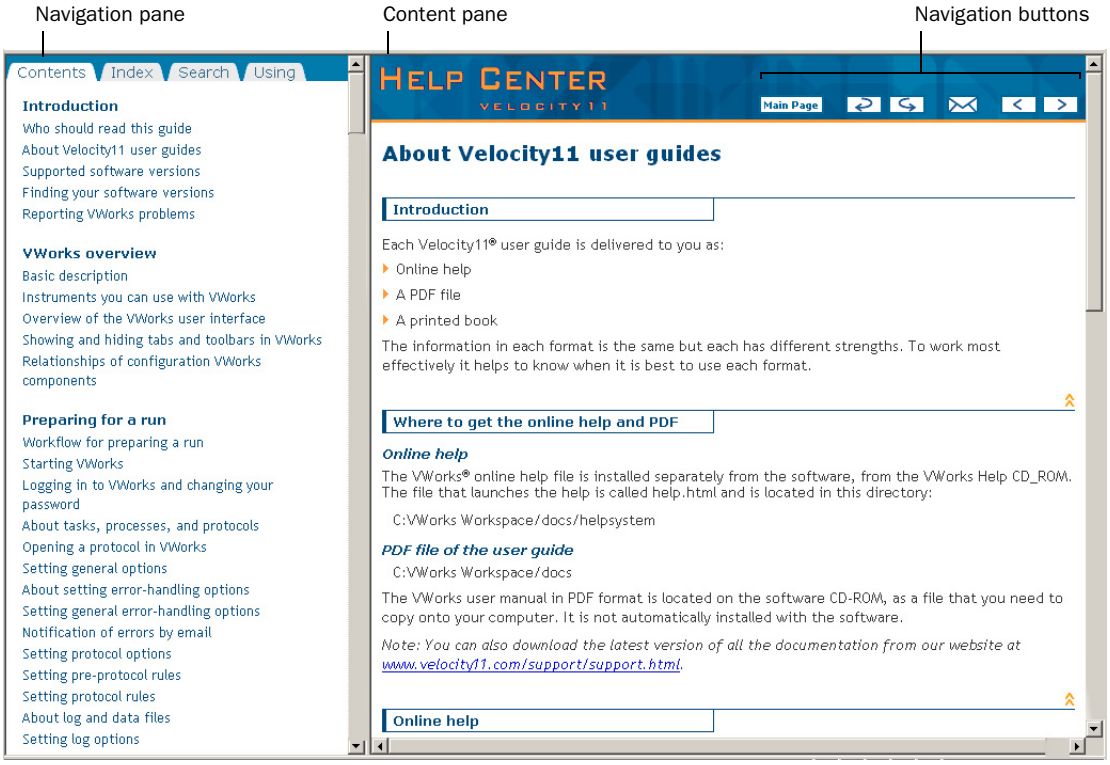
***To open the online help:***

1. In the Velocity11 lab automation software, press F1. The online help window opens.

### Main features

The online help window contains the following:

- ❑ *Navigation pane*. Consists of four tabs. The Contents, Index, and Search tabs provide different ways to locate information. The Using tab contains information about using the help system.
- ❑ *Content pane*. Displays the online help topics.
- ❑ *Navigation buttons*. Enables you to navigate through the pages.The online help includes a navigation pane, content pane, and navigation buttons.




## PDF user guides

### Computer requirements

To open a user guide in PDF format, you need a PDF viewer. You can download a free PDF viewer from the internet.

### Printing and searching

The user guides in PDF format are mainly for printing additional copies. You can perform simple searches in the PDF file, although these searches are much slower than online help searches.

### More information

For more information about using PDF documents, see the user documentation for the PDF viewer.

## Related topics

| For information about... | See... |
|---|---|
| Who this guide is for | “Who should read this guide” on page 2 |
| What’s in this guide | “What this guide covers” on page 5 |
| Device driver plug-ins | “About device drivers” on page 7 |

# What this guide covers

**About this topic**

This topic presents an overview of what procedures and information are provided in this user guide.

This guide explains how to:

- ❑ Install the driver for the device
- ❑ Configure the device in the device manager
- ❑ Set and use the tasks associated with the device
- ❑ Use *Device* Diagnostics

**Also read**

Information about device drivers not covered in this guide and about running VWorks or BenchWorks software can be found in the *VWorks Version 3 Automation Control User Guide* or the *BenchWorks Automation Control User Guide*.

**Driver version**

***To find version information for a driver in VWorks:***

1. Start VWorks.
2. Click **Help** and select **About VWorks**.

   The **About VWorks** dialog box lists the version numbers of all the current software for all the devices and plug-ins.

***To find version information for a driver in BenchWorks:***

1. Start BenchWorks.
2. Click **Help** and select **About BenchWorks**.

   The **About BenchWorks** dialog box lists the version numbers of all the current software for all the devices and plug-ins.

**Firmware version**

Some devices have firmware installed on them. Because each device is different, the version number may not be the same for all devices.

***To find version information for device firmware:***

1. Open ***Device*** **Diagnostics** dialog box.
2. Click **About**.

   The **About *Device* Control** message box appears displaying the current version of firmware.

**What this guide does not cover**

This guide does not cover the following:

- ❑ The operation of the device
- ❑ The operation of VWorks or BenchWorks software
- ❑ Velocity11 devices, such as the PlateLoc Sealer, VCode Microplate Labeler, and VPrep Pipettor when used in stand-alone mode

**VWorks or BenchWorks compatibility**

If you have purchased a device driver plug-in and are installing it yourself, check with the Velocity11 Technical Support to be sure your version of VWorks or BenchWorks software and the device driver plug-in are using the same version of IWorks software.

**BenchWorks versions**

Device driver plug-ins used with BenchWorks software may not include some newer features that were specifically added for use with VWorks software and that are described in this manual.

**Related topics**

| For information about... | See... |
|---|---|
| Who this guide is for | "Who should read this guide" on page 2 |
| User documentation | "About Velocity11 user guides" on page 3 |
| Device driver plug-ins | "About device drivers" on page 7 |

# About devices

**About this topic**

This topic presents a definition of a Velocity11 device and the device file.

Read this topic if you are unfamiliar with Velocity11 devices and VWorks or BenchWorks software.

**Device defined**

A device is an item on your lab automation system that has an entry in the device manager. A device can be a robot, an instrument, or a location on the lab automation system that can hold a piece of labware.

Examples of devices:

- ❑ Velocity11 robot
- ❑ Human robot
- ❑ PlateLoc Thermal Plate Sealer
- ❑ Labcyte Echo550
- ❑ Platepad
- ❑ VPrep shelf
- ❑ Waste

**Device file defined**

The data entered into the device manager and saved as a device file contains the configuration information for your devices.

**Device file location**

Device files have the file name format *file name*.dev and are stored in the folder location that you specify when saving the file.

**Related topics**

| For information about... | See... |
|---|---|
| Device diagnostics | "About diagnostics" on page 11 |
| Device profiles | "About profiles" on page 15 |
| Adding a device to the device manager | "Adding devices" on page 10 |

# About device drivers

**About this topic**

This topic describes what device drivers are and what they do.

Velocity11 device drivers enable mechanical devices or software programs to work with VWorks or BenchWorks software.

Read this topic if you are:

- ❑ An administrator in charge of installing device drivers and managing Velocity11 devices
- ❑ A lab automation system integrator who writes software and configures hardware controlled by VWorks or BenchWorks software

**Device driver defined**

A Velocity11 device driver enables VWorks or BenchWorks software to control and communicate with the specific type of device. Each type of device that you operate with VWorks or BenchWorks software requires a device driver.

For example, VWorks software uses the:

- ❑ VPrep Pipettor device driver to communicate with the Velocity11 VPrep Pipettor device
- ❑ Softmax Reader device driver to communicate with Molecular Devices readers

**Plug-in defined**

A plug-in is a software program that when added to another program extends it.

**Plug-in device drivers**

Some device drivers are incorporated directly into the VWorks or BenchWorks software application. Other device drivers are distributed as plug-ins. All the device drivers covered in this guide are the plug-in type.

Advantages of distributing device drivers as plug-ins are:

- ❑ You only need to install the plug-ins for the devices you use
- ❑ When new plug-ins become available, they can be easily added. There is no need to re-install the VWorks or BenchWorks software application

### IWorks interface

The device driver plug-ins and VWorks or BenchWorks software use IWorks software as a common interface to communicate with each other. Using a common interface allows the creation of a device driver plug-in without the necessity of changing the software.

**!! IMPORTANT !! Both VWorks or BenchWorks software and the device driver must be using the same version of IWorks to work properly.**

### Writing your own device driver

If you are a lab automation system integrator who writes software and configures hardware controlled by VWorks or BenchWorks software, you can write your own driver plug-in for a new device. Contact the Velocity11 Technical Support for information about how to do this.

### What functions do the device drivers provide?

Once installed, the following items are enabled:

- ❑ Tasks associated with the device.

  Device-specific tasks appear in the Protocol Tasks list and are available for use in protocol editor processes.
- ❑ Task parameters associated with the device.

  Device-specific task parameters appear in the Protocol Task Parameters toolbar. These determine the conditions with which to execute the tasks of the device.
- ❑ Diagnostic commands specific to the device.

  Device-specific diagnostic commands and options appear in the *Device* Diagnostics dialog box. These commands enable direct control of the device.

### Related topics

| For information about... | See... |
|---|---|
| Adding a device to the device manager | “Adding devices” on page 10 |
| Opening diagnostics | “Opening diagnostics” on page 12 |
| Installing a device driver | “Installing device drivers” on page 9 |
| Devices | “About devices” on page 6 |

# Installing device drivers

**About this topic**

Devices are integrated into VWorks or BenchWorks software using device driver plug-ins. Plug-ins need to be installed before the device can be configured and used.

This topic describes how to install device drivers if they are not already installed on your system. Read this topic if you are an administrator in charge of managing Velocity11 devices.

**Procedure**

***To install device drivers:***

1. Insert the device driver installation disc into the CD-ROM of the computer running VWorks or BenchWorks software.
2. Follow the on-screen instructions for installation, selecting the default values when available.
3. When finished, exit VWorks or BenchWorks software.
4. Log off Windows and restart your computer.
5. Start VWorks or BenchWorks software.

| For this application... | The default location for the device driver is... |
|---|---|
| VWorks software | C:\VWorks Workspace\bin\plugins |
| BenchWorks software | C:\Program Files\Velocity11\BenchWorks\plugins |

**Related topics**

| For information about... | See... |
|---|---|
| Device drivers | “About device drivers” on page 7 |
| Opening diagnostics | “Opening diagnostics” on page 12 |

# Adding devices

**About this topic**

To configure your lab automation system to use a device, you need to add it to a device file in VWorks or BenchWorks software. The VWorks or BenchWorks software device manager uses the information in the device file to communicate and operate the device within the automation system.

This topic describes how to:

- ❑ Create a new device file (if one does not already exist)
- ❑ Add devices
- ❑ Save the device file

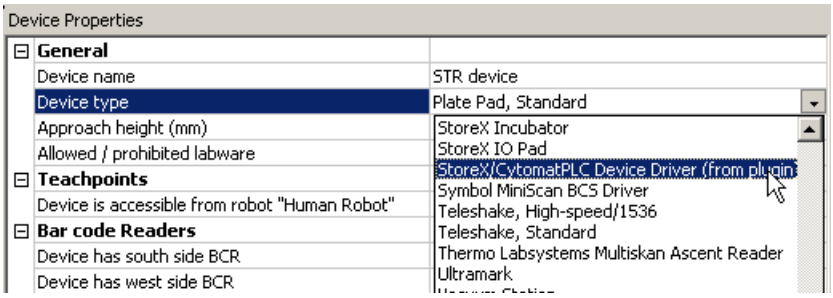
Read this topic if you are an administrator in charge of managing Velocity11 devices.

**Procedure**

***To add devices to a device file:***

1. Make sure that the devices are physically networked to the VWorks or BenchWorks software computer and turned on.
2. Start VWorks or BenchWorks software and login as an Administrator.
3. Do one of the following:
   - ◆ If you have an existing device file that you want to add to, select **File** > **Device File**, click **Open,** and select your device file.
   - ◆ If you are creating a new device file, select **File** > **Device File** and click **New**.
4. Click the **Device Manager** tab.
5. Click **New device** in the **Device List** toolbar and enter a name for the device you are adding.
6. In the device manager, set the **Device type**.

   The default type is **Plate Pad, Standard**.




7. Repeat step 5 and step 6 for each device.

8. Select **File** > **Device File** > **Save**.

   If you are creating a new device file, you are prompted to enter a name for your device file.

   Alternatively, you can select **File** > **Save All**. This saves the device file and the current protocol file at the same time.

**Related topics**

| For information about... | See... |
|---|---|
| Device drivers | "About device drivers" on page 7 |
| Setting generic device properties | "Setting the properties for a device" on page 16 |
| Adding a sub-process to a protocol | "Adding and linking Sub Process tasks" on page 19 |
| Opening diagnostics | "Opening diagnostics" on page 12 |

# About diagnostics

**About this topic**

This topic presents an overview of diagnostics software.

Read this topic if you need to set up or troubleshoot a device running VWorks or BenchWorks software.

**Background**

Devices can be controlled in real time directly through the VWorks or BenchWorks software Diagnostics using simple commands.

Diagnostics software is used for:

- ❑ Troubleshooting
- ❑ Setting teachpoints
- ❑ Performing manual operations outside a protocol
- ❑ Creating and editing profiles

For example, if an error occurs during a run that leaves a plate and the robot where they should not be, you can use robot diagnostics to move the plate and return the robot to its home position.

**Types of diagnostics software**

Devices and robots manufactured by Velocity11 include their own diagnostics software. You can find instructions for using this software in the relevant user guide.

**Related topics**

| For information about... | See... |
|---|---|
| Opening diagnostics | "Opening diagnostics" on page 12 |
| Adding a device to the device manager | "Adding devices" on page 10 |
| Device drivers | "About device drivers" on page 7 |
| The definition of devices | "About devices" on page 6 |

# Opening diagnostics

**About this topic**

Every device has diagnostics software to assist you with troubleshooting and setting up the device. This topic describes how to open a device's diagnostics in VWorks or BenchWorks software.

Read this topic if you need to access a device's diagnostics to perform a device setup task or manually operate a device.

**Procedure 1**

**If you are using VWorks4 software**

***To open Diagnostics:***

1. Click **Diagnostics** on the Control toolbar.


2. In the device file's window, select the device. Expand the general name of the device, if necessary.

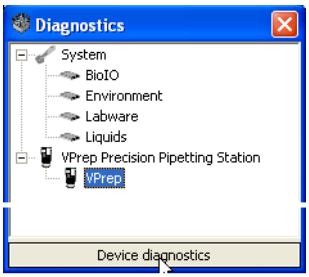

3. Click **Device diagnostics** located at the bottom of the window. The device's diagnostics dialog box opens.

**If you are using VWorks3 or BenchWorks software**

***To open Diagnostics:***

1. Click **Diagnostics** on the Control toolbar.


2. In the **Diagnostics** window, select thedevice. Expand the general name of the device, if necessary.




3. Click **Device diagnostics**. The device's diagnostics dialog box opens.

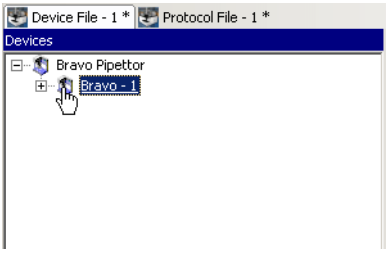
**Procedure 2**

**If you are using VWorks4 software**

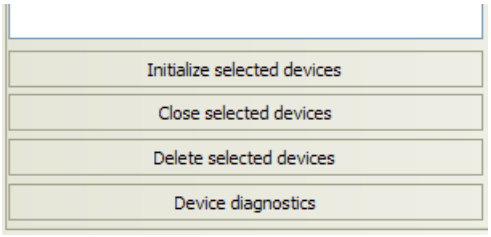
***To open Diagnostics:***

1. Click the **Device File** tab.
2. Select the device from the **Devices** toolbar.

   Expand the general name of the device, if necessary.




3. Click **Device diagnostics** located at the bottom of the **Devices** toolbar.

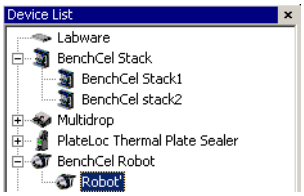



   The device's diagnostics dialog box opens.

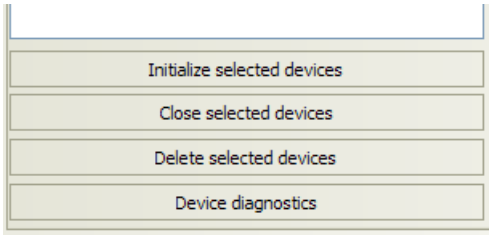
**If you are using VWork3 or BenchWorks software**

***To open Diagnostics:***

1. Click the **Device Manager** tab.
2. Select the device from the **Device List** toolbar. Expand the general name of the device, if necessary.




3. Click **Device diagnostics** located at the bottom of the **Device List** toolbar.




The device's diagnostics dialog box opens.

## Related topics

| For information about... | See... |
|---|---|
| Diagnostics | "About diagnostics" on page 11 |
| About device drivers | "About device drivers" on page 7 |
| Adding a device to the device manager | "Adding devices" on page 10 |
| Setting generic device properties | "Setting the properties for a device" on page 16 |

# About profiles

**About this topic**

This topic describes what profiles are and what they do.

Read this topic if you are an administrator in charge of managing Velocity11 devices.

**Profiles defined**

A profile contains the initialization settings needed for communication between a device and device driver. The data in a profile is used by VWorks or BenchWorks software to identify each device on the network.

A profile can also contain other basic settings that you are unlikely to change once set up.

Because profiles identify device driver devices on the network, each device driver device must have its own profile.

You can create, modify, and delete profiles as needed.

**Stored settings**

Profiles are stored in the Windows registry.

The settings stored in a device driver profile include:

- ❑ Whether the device is connected using serial or Ethernet
- ❑ If the device is connected using Ethernet, the Device ID of the device on the network
- ❑ If the device is connected using serial, the COM port that the controlling computer uses for communication
- ❑ Configuration of accessories

**Related topics**

| For information about... | See... |
|---|---|
| Device drivers | “About device drivers” on page 7 |
| Adding a device to the device manager | “Adding devices” on page 10 |
| Opening device diagnostics | “Opening diagnostics” on page 12 |

# Setting the properties for a device

**About this topic**

The device properties provide VWorks or BenchWorks software with additional information about the device's current configuration, such as which profile to use, and stores the information in the device file. The device file is automatically loaded when you open a protocol.

The device properties need to be set when configuring the device. Typically, these properties only need to be set once. This topic describes how to set the following device properties:

- ❑ General
- ❑ Teachpoint
- ❑ Barcode
- ❑ Location (for devices with multiple teachpoints)
- ❑ *Device* Properties

Read this topic if you are an administrator in charge of managing Velocity11 devices.

**Before you start**

Make sure that you have installed the device driver plug-in and have added the device to the device manager.

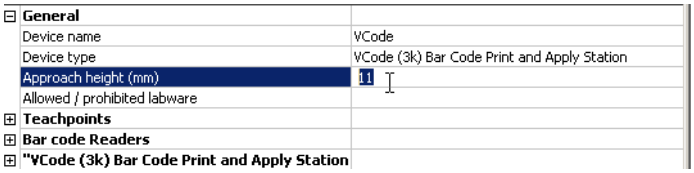
See "Related information" for procedures on how to do these tasks.

**Setting general properties**

***To set the general properties for a device:***

1. Click the **Device Manager** tab.
2. Select the device from the **Device List** toolbar. (Expand the device name, if necessary.)

   *Note:* For devices with **Locations**, see "Setting location properties" on page 17. If no Locations, continue with step 3.
3. In the **General** group, set the following:
   a. **Approach height**. This is the height to raise the robot gripper above the teachpoint when the robot moves the plate horizontally towards or away from it.



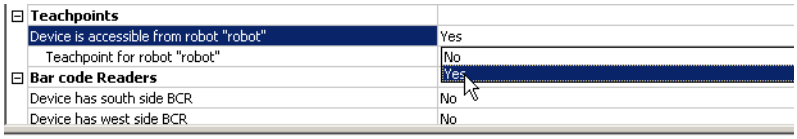

   b. **Allowed/prohibited labware**. Click the adjacent field to open the dialog box. Move the labware classes by selecting them and clicking one of the arrow buttons.
4. In the ***Device* Properties**, select the desired profile if it is not already selected.
5. Select **File** > **Device File** > **Save** to save the changes to the device file.

## Setting teachpoints

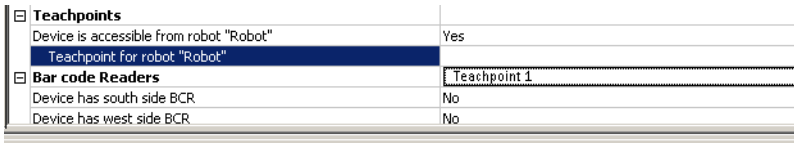
Teachpoints are the coordinates in space that a robot travels to in order to interact with a device. Only the devices that are accessible by robots are able to have teachpoints.

***To set the teachpoint properties:***

1. Open the **Device Properties** page.
2. In the **Teachpoints** property group, set the following:
   a. **Device is accessible from robot *robot's name***. Choose **Yes** or **No**.




   b. **Teachpoint for robot *robot's name***. Choose a file.




## Setting barcode location

If your device has a barcode reader, indicate where the reader is located.

***To set the barcode readers property:***

1. In the **Barcode Readers** property group, set the side that has the barcode to **Yes**.


2. Enter the number of the COM port to which the device is connected.

## Setting location properties

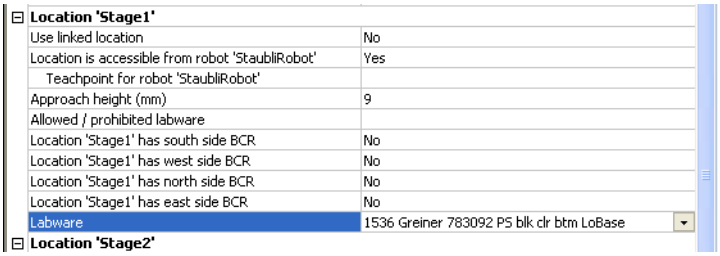
*Note:* The options available under Location groups might differ for software and hardware device drivers. Software devices do not have robot-accessible labware positions.

For hardware devices that have more than one robot-accessible labware position, the approach height, allowable/prohibited labware, teachpoint, and barcode properties are located under Location groups.

***To set the Location properties:***

1. *Hardware device drivers only.* Set the **Use linked location**. Follow the procedure in "Setting the Use linked location" on page 18.
2. *Hardware device drivers only* Set the **Teachpoints**. Follow the procedure in "Setting teachpoints" on page 17.

3. *Some software device drivers only.* Set the **Approach height** and **Allowed/prohibited labware**. Follow the procedure in "Setting general properties" on page 16.
4. Set the **Barcode Readers** location. Follow the procedure in "Setting barcode location" on page 17.
5. Assign the **Labware** used by the location by selecting the correct labware type from the list.



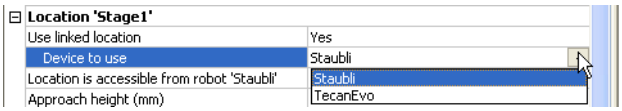

6. In the ***Device* Properties**, select the desired profile if it is not already selected.
7. Select **File** > **Device File** > **Save** to save the changes to the device file.

## Setting the Use linked location

Currently, this feature is enabled for the special situations in which there is a storage device such as a PlateHub Carousel, StoreX, or Cytomat and a robot, such as the Velocity11 Translator robot that is shuttling plates between systems.

To use this feature, select yes and then select the device location to which you want to link. This tells the software that the current device location is the same physical location as the device selected from the Device to use list.

*Note:* Selecting this option when it is not enabled will have no effect on the system.




## Related topics

| For information about... | See... |
|---|---|
| Device drivers | "About device drivers" on page 7 |
| Installing a device driver plug-in | "Installing device drivers" on page 9 |
| Profiles | "About profiles" on page 15 |
| Adding a device to the device manager | "Adding devices" on page 10 |
| Opening diagnostics | "Opening diagnostics" on page 12 |

# Adding and linking Sub Process tasks

**About this topic**

This topic describes how to add a sub-process to a protocol and configure it. Read this topic if you are an administrator or technician and are responsible for creating protocols in VWorks or BenchWorks software.

**Before you read this**

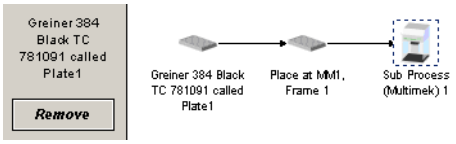
Before you read this topic, become familiar with the topics in the *VWorks Version 3 Automation Control User Guide* or *BenchWorks Automation Control User Guide* describing what a protocol is and how it is created.

**Sub Process task defined**

Sub Process tasks indicate the existence of a subroutine within a protocol. Sub-processes typically contain a series of liquid handling tasks used by devices such as the VPrep Pipettor or Multimek dispenser.

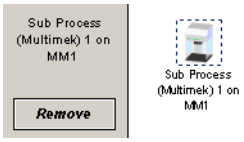
**Adding a Sub Process task**

The first step in creating a pipette process is to add a Sub Process task to the protocol editor. Drag the Sub Process icon into the process.




**Setting Sub Process task parameters**

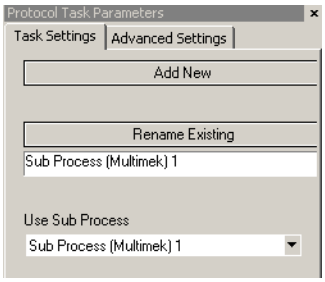
When you add the Sub Process task, a new sub-process is started in the pipette process editor. This process is identified by its sub-process link icon.




Because you can have more than one sub-process in a protocol, you must link the Sub Process task to the correct sub-process.

***To link the Sub Process task to the correct sub-process:***

1. In the **Protocol Editor**, add a Sub Process task to the protocol and then select it in the protocol sequence.
2. In the **Protocol Task Parameters** toolbar, select the sub-process that you want to use for this pipetting task from the **Use Sub Process** list.




3. If there is only one sub-process and you need to create a second one, click **Add New**.

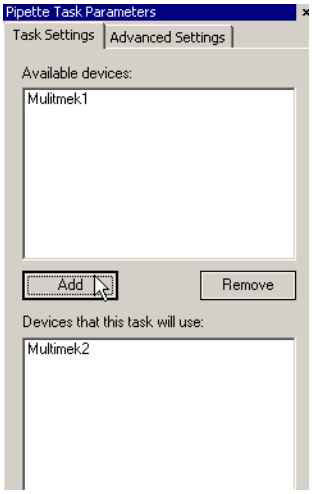
## Associating the sub-process to a device

Because you can have more than one device that uses sub-processes on a lab automation system, you must link each sub-process link icon with one or more devices that you want the sub-process to be able to use. You do this by setting the parameter for the sub-process link icon.

### *To link a Sub Process task to a device:*

1. In the **Pipette Process Editor**, select the **Sub Process** link icon.


2. In the **Available devices** list of the **Pipette Task Parameters** toolbar, select one or more pipettors to link to and click **Add**.




The selected pipettors move to the lower box and become available for use.

**Related topics**

| For information about... | See... |
|---|---|
| Device drivers | "About device drivers" on page 7 |
| Setting common device properties | "Setting the properties for a device" on page 16 |
| Adding a device to the device manager | "Adding devices" on page 10 |
| Creating protocols | ❑ *VWorks Version 3 Automation Control User Guide*<br>❑ *BenchWorks Automation Control User Guide* |

# Using JavaScript to set task parameters

**About this topic**

JavaScript programs (scripts) can be used to change the parameters of a protocol task immediately before it is scheduled. This extends the capability of VWorks or BenchWorks software because the parameters can be changed dynamically during a run, based on the following:

- ❑ Information passed from an external source, such as a database
- ❑ The number of times the protocol has cycled
- ❑ Feedback on changing conditions during the run

This topic describes the use of JavaScript to set task parameters in a protocol.

Read this topic if you are an administrator or technician responsible for creating VWorks or BenchWorks software protocols and want to add functionality to a task using JavaScript.

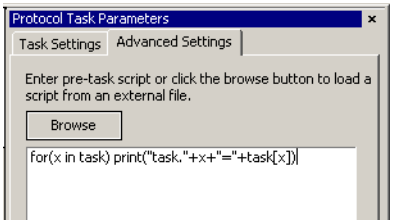
**Where scripts are written**

Scripts can be written in two ways:

- ❑ Directly into the box in the Advanced Settings tab of the Task Parameters toolbar
- ❑ As an external file that is located by clicking Browse in the Advanced Settings tab and navigating to its location on the hard drive

*Note:* You can also call an external file by embedding the "`open()`" function in the box.

The following screenshot displays a short script that prints the parameters of a task to the log toolbar, just before the task runs. In this case, the script is written directly in the Advanced Settings box.




For more information about using JavaScript, refer to the *VWorks Version 3 Automation Control User Guide* or the *BenchWorks Automation Control User Guide*.

**Related topics**

| For information about... | See... |
|---|---|
| Using JavaScript in protocols | ❑ *VWorks Version 3 Automation Control User Guide*<br>❑ *BenchWorks Automation Control User Guide* |
| Adding tasks to protocols | ❑ *VWorks Version 3 Automation Control User Guide*<br>❑ *BenchWorks Automation Control User Guide* |

# About reader output files

**About this topic**

Plug-in device drivers that are written for plate readers have a common way of naming their output files. This topic explains the concepts related to output file naming. By reading this topic, you will learn how to prevent data in the reader output files from being overwritten by newer data.

Read this topic if you are an operator who wants to make changes to the task parameters for one of these readers:

- ❑ VR4000
- ❑ Analyst GT
- ❑ Fusion
- ❑ Viewlux
- ❑ Tecan readers

**Plug-in default output file**

When you first install a reader device driver plug-in, all data recorded during a protocol or by a manual read using diagnostics software is written to a single file stored in the C: drive.

The exact name of the file is specific to the device. For example, the RVSI VR4000 device driver creates a file with the name vialreaderresults.txt.

This file can only store data for one read, which means that the set of data for each read overwrites the last set in the file. To avoid this problem you must set up an output file naming convention.

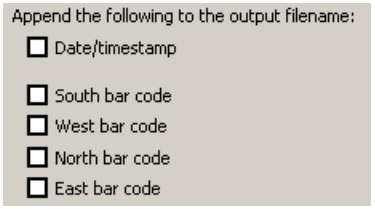
### Profile default output file name

Some device drivers allow more than one device of that type to be used in the lab automation system. In this case, each device must have its own profile. Even if you have only one device, you can still set up multiple profiles for it, with each storing different settings.

In these cases, you probably want each profile to have a separate default output filename to prevent the data from runs using one profile overwriting those of another.

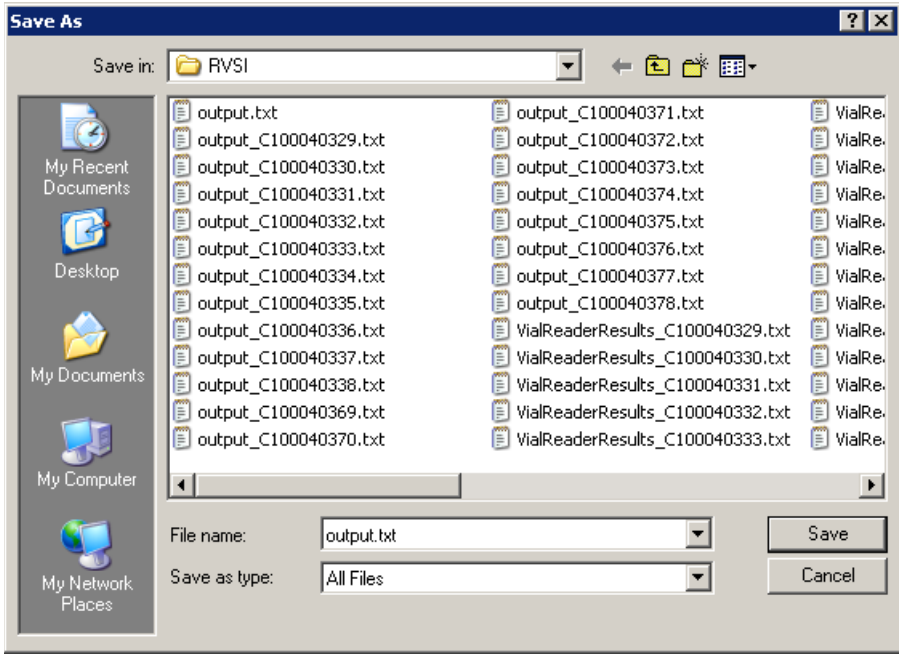
### Filename suffixes

To prevent the data from one read overwriting the data from another, you need to append a variable suffix to the file name. You can append a date/time stamp and one or more bar codes on the rack or plate.




### Example

The example output file folder below shows that a profile default file name of output.txt was created at one time. At another time, a suffix was appended in the profile for the device driver, which added a barcode identifier to the file name (for example output_C100040329.txt).




## Overriding output file names with tasks

You can override the default output file name that is set in the profile using the Output filename property of the Read task parameters.

| "Read tubes" properties | |
|---|---|
| Use tubes expected parameter | No |
| Tubes expected (0-96 ) | 96 |
| Output filename | |

This allows you to use different output file names for every task.

The suffix used for the file name that you set in the task parameters is taken from the suffix specified in the device diagnostics profile. So if you select date/time stamp in the profile, the date/time stamp will also be appended during a run in which you have specified a different file name.

## Related topics

| For more information about... | See... |
|---|---|
| Opening diagnostics | “Opening diagnostics” on page 12 |
| Profiles | “About profiles” on page 15 |

# About device initialization

**About this topic**

When working in device diagnostics software, you are often required to initialize the device. This topic explains why device initialization is necessary.

**Opening communications**

Initializing a device opens communications with it. For example, if the device is connected with a serial cable, the COM port is opened, and if the device is connected with an Ethernet cable, the TCP/IP socket is connected.

**Homing motors**

Initializing a device homes motors that do not track their position along their line of travel. Homing a motor moves it until it triggers an event, called a home flag. This tells the motor its location.

The motors on some devices automatically move to their home positions when the device is turned on. The motors on other devices must be initialized to be homed.

**Setting profile parameters**

Initializing a device applies relevant parameters set in the device's profile.

**Setting state and memory variables**

Most devices store variables in software or firmware. Initializing a device sets these variables to their initial values.

**Related topics**

| For information about... | See... |
|---|---|
| Using Diagnostics | ❑ "About diagnostics" on page 11<br>❑ "Opening diagnostics" on page 12 |
| Workflow for configuring devices | "Adding devices" on page 10 |

# Static Stack 2

The Static Stack device driver enables you to use robots with stackers that are not electronically controlled. The Static Stack device driver is designed for use in lab automation systems running VWorks or BenchWorks software.

This chapter contains the following topics:

# Workflow for configuring the Static Stack

**About this topic**

This topic gives the workflow for configuring the Static Stack device driver. Read this topic if you are an administrator responsible for setting up devices in VWorks or BenchWorks software.

**Before you start**

Before you can configure the Static Stack device driver, you must have installed it.

**Workflow**

| Step | Topic |
|---|---|
| 1 | "Adding devices" on page 10 |
| 2 | "Setting the properties for a device" on page 16 |

*Note:* The Static Stack device driver does not need a profile because it is not an electronically-controlled device.

**Related topics**

| For information about... | See... |
|---|---|
| Device Drivers | "About device drivers" on page 7 |
| Device driver installation | "Installing device drivers" on page 9 |
| Adding a device | "Adding devices" on page 10 |
| Opening diagnostics | "Opening diagnostics" on page 12 |
| Setting device properties | "Setting the properties for a device" on page 16 |

# Setting Static Stack task parameters

**About this topic**

When you add a Static Stack task to a protocol, you need to set the parameters for the task. This topic describes how to set the Static Stack device driver task parameters.

Read this topic if you are:

- ❑ An administrator or technician responsible for creating protocols in VWorks or BenchWorks software
- ❑ An operator who wants to make changes to the Static Stack task parameters in a protocol (but who cannot save the protocol)

## Before you start

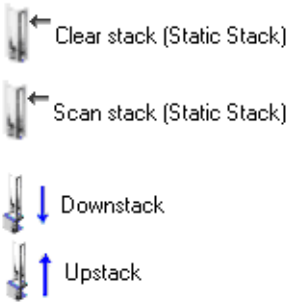
Before you start, the Static Stack must be configured in the VWorks or BenchWorks Device Manager, including entering the stack height and your system's Access and Base Locations (teachpoints).

| Location 'Access Location' | |
|---|---|
| Location is accessible from robot 'Tran Robot' | Yes |
| Teachpoint for robot 'Tran Robot' | 0-Start Location |
| **Location 'Base Location'** | |
| Location is accessible from robot 'Tran Robot' | Yes |
| Teachpoint for robot 'Tran Robot' | 1-End Location |

## About Static Stack tasks

There are four tasks associated with the Static Stack:

These tasks are represented by the following icons in the Pre/Post Protocol and Protocol Tasks toolbars:




| Task | Function | VWorks or BenchWorks Editor |
|---|---|---|
| Clear stack (Static Stack) | Instructs VWorks or BenchWorks software to remove the stored value for the number of plates in the Static Stack. | Pre-Protocol<br>Post-Protocol |
| Scan stack (Static Stack) | Instructs VWorks or BenchWorks software to scan the Static Stack for the number of plates and to store that number. | Pre-Protocol<br>Post-Protocol |
| Downstack | Picks the top piece of labware off the Static Stack.<br>*Note:* The process of moving a plate out of a stacker is called downstacking. | Protocol |
| Upstack | Places a piece of labware on the top of the Static Stack.<br>*Note:* The process of moving a plate into a stacker is called upstacking. | Protocol |

### Determining stack height between protocols

Prior to running a protocol, stack height must be determined. VWorks or BenchWorks software retains a value for the stack height between protocols. In cases where multiple protocols use plates from the same source, you may not want VWorks or BenchWorks software to retain the original stack height values.

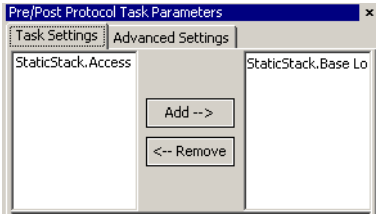
There are two options:

- ❑ Select **Yes** for **Scan even if previously scanned** in **"Scan stack" properties** on the **Task Settings** toolbar.
- ❑ Add a **Clear stack (Static Stack)** task to the protocol (usually in the post-protocol editor) to ensure that the stack height is removed when a protocol is finished.

### Setting Clear stack task parameters

***To set the Clear stack task parameters:***

1. Add the **Clear stack (Static Stack)** task to the Pre- or Post-protocol process.
2. Click the **Task Settings** tab on the **Pre/Post Task Parameters** toolbar.
3. Select a location from the left side of the **Task Settings** tab. Click **Add** to choose that location to be used for the task execution.

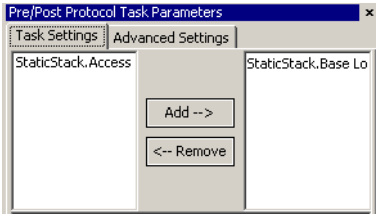



### Setting Scan stack task parameters

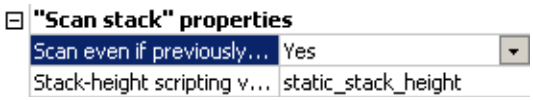
***To set the Scan stack task parameters:***

1. Add the **Scan stack (Static Stack)** task to the Pre- or Post-protocol process flow chart.
2. Click the **Task Settings** tab on the **Pre/Post Task Parameters** toolbar.
3. Select a location from the left side of the **Task Settings** tab. Click **Add** to choose that location to be used for the task execution.

   To remove the location, select a location from the right side of the **Task Settings** tab and click **Remove**.




4. Set properties on the **"Scan stack" properties**.



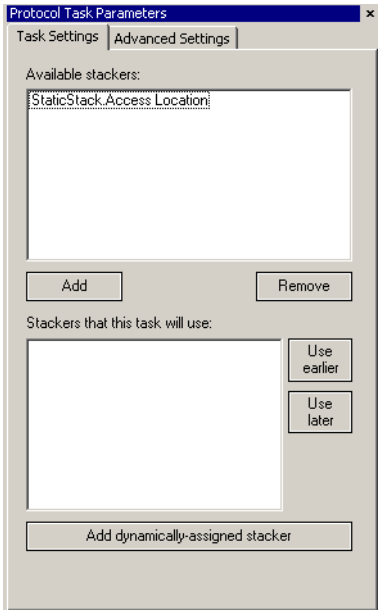

| Property | Comment |
|---|---|
| Scan even if previously scanned | Select Yes to erase previously retained stack height values |
| Stack-height scripting variable | JavaScript variable that reports the stack height. The default name is displayed. |

## Setting Upstack and Downstack task parameters

***To set the Upstack and Downstack task parameters:***

1. Add the **Downstack** or **Upstack** task to a protocol process.
2. In the list of **Available stackers** in the **Protocol Task Parameters** toolbar, select a stacker to downstack-from or upstack-to and click **Add**. The selected stacker moves to the **Stackers that this task will use** field.

   *Note:* To select more than one stacker, SHIFT-click or CTRL-click before clicking **Add**. An asterisk next to a stacker in the list means that the stacker is currently assigned to a task that uses the same labware. To remove a stacker from your list of available stacker devices, select it and click **Remove**.




3. If you have added more than one stacker, you can change the order in which particular stackers are used:
   a. Select a stacker.
   b. Click **Use earlier** to increase the priority of the stacker or **Use later** to decrease its priority.

4. During Upstacking tasks, if you want to dynamically assign an upstacking stacker, click **Add dynamically-assigned stacker**.

   *Note:* With dynamic assignment you do not have to specifically assign every stacker that will receive plates because assignments are made automatically. When stackers are dynamically assigned, the text TBD, meaning To Be Determined, is added to the stacker task icon.

**Related topics**

| For information about... | See... |
|---|---|
| Changing the labware used with the Static Stack | Static Stack user documentation |
| Diagnostics | "About diagnostics" on page 11 |
| Setting device properties | "Setting the properties for a device" on page 16 |

# Operating Static Stack with diagnostics

**About this topic**

This topic describes using the Static Stack Diagnostics to:

- ❑ View information about the stack
- ❑ Perform a scan of the stack to determine stack height
- ❑ Open the diagnostics for the associated robot

**Before you start**

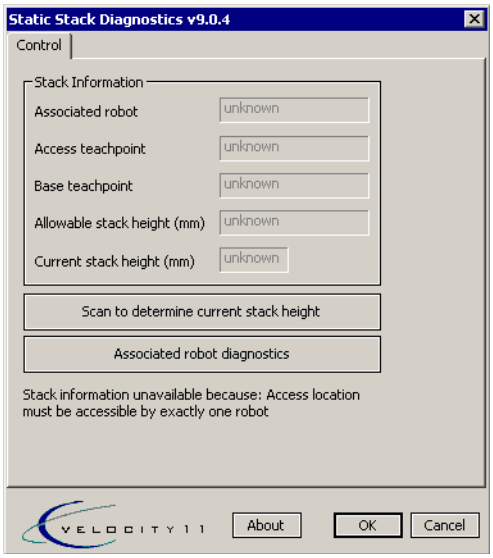
Configure the Static Stack in the VWorks or BenchWorks Device Manager, including entering the stack height and your system's Access and Base Locations (teachpoints).

| Location 'Access Location' | |
|---|---|
| Location is accessible from robot 'Tran Robot' | Yes |
| Teachpoint for robot 'Tran Robot' | 0-Start Location |
| **Location 'Base Location'** | |
| Location is accessible from robot 'Tran Robot' | Yes |
| Teachpoint for robot 'Tran Robot' | 1-End Location |

**Viewing information about the Static Stack**

***To view information about the Static Stack:***

1. Open **Static Stack Diagnostics**.




2. View the **Stack Information** area for the following information.

| Name | Description |
|---|---|
| Associated robot | The name of the robot that can access the Static Stack. This association is stored in the VWorks or BenchWorks software device file. |
| Access teachpoint | This is the point at which the robot starts scanning for plates, usually just above the physical limit where a stack is placed. |
| Base teachpoint | This is the lowest position to which a robot should scan for plates. For example, the physical limiting point (usually the table). |
| Allowable stack height (mm) | The maximum allowable height of the stacked labware provided it is a distance less-than or equal-to the distance between the access and base teachpoint. |
| Current stack height (mm) | The height as determined by a scan, minus any plates that have been removed during the protocol. |

## Scanning for stack height

***To perform a scan of the Static Stack:***

1. Open the **Static Stack Diagnostics**.
2. Click **Scan to determine current stack height** to display the current stack height in the **Current stack height (mm)** box.

## Opening the robot diagnostics

***To open the robot diagnostics:***

1. Open the **Static Stack Diagnostics**.

2. Click **Associated robot diagnostics**. The diagnostics dialog box for the robot opens in a new window.

## Related topics

| For information about... | See... |
|---|---|
| Diagnostics | “About diagnostics” on page 11 |
| Opening Diagnostics | “Opening diagnostics” on page 12 |

Agilent Technologies

# User Guide

G5415-90048