

Fusion

Device Driver User Guide



Notices

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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

Documentation feedback: documentation.automation@agilent.com Technical Support: 1.800.979.4811 or +1.408.345.8011 service.automation@agilent.com Customer Service: 1.866.428.9811 or +1.408.345.8356 orders.automation@agilent.com European Service: +44 12081443513 euroservice.automation@agilent.com Web: http://www.agilent.com

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Introduction



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" on page 2
- □ "About Velocity11 user guides" on page 3
- □ "What this guide covers" on page 5
- □ "About devices" on page 6
- □ "About device drivers" on page 7
- □ "Installing device drivers" on page 9
- □ "Adding devices" on page 10
- □ "About diagnostics" on page 11
- "Opening diagnostics" on page 12
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- General Setting the properties for a device" on page 16
- "Adding and linking Sub Process tasks" on page 19
- □ "Using JavaScript to set task parameters" on page 21
- □ "About reader output files" on page 22
- □ "About device initialization" on page 25

Who should read this guide

Job role	Responsibilities
Integrator	Someone who writes software and configures hardware controlled by device drivers.
Lab manager, administrator, or	Someone who is responsible for:
technician	□ Installing device drivers
	Managing device drivers
	Developing the applications that are run using device drivers
	Solving the more challenging problems that might arise
	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.
	Your organization may choose to create its own procedures for operators including the procedures in this guide.

Job roles

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

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	Online help	
information	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.	
	<i>Note:</i> 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.	

Fusion Device Driver User Guide

Navigation pane	Content pane	Navigation buttons
Contents Index Search Using		
Who should read this guide About Velocity11 user guides Supported software versions	About Velocity11 user guides	
Reporting VWorks problems	Introduction	
Wworks overview Basic description Instruments you can use with VWorks Overview of the VWorks user interface Showing and hiding tabs and toolbars in VWorks Relationships of configuration VWorks components	Each Velocity11 [®] user guide is delivered to you as: • Online help • A PDF file • A printed book The information in each format is the same but each has different str effectively it helps to know when it is best to use each format.	engths. To work most
Preparing for a run Workflow for preparing a run Starting VWorks Logging in to VWorks and changing your password About tasks, processes, and protocols Opening a protocol in VWorks Setting general options About setting error-handling options Setting general error-handling options Notification of errors by email Setting protocol options Setting protocol options	Where to get the online help and PDF Online help The Works® online help file is installed separately from the software, The file that launches the help is called help.html and is located in this C:VWorks Workspace/docs/helpsystem PDF file of the user guide C:VWorks Workspace/docs The VWorks user manual in PDF format is located on the software CD- copy onto your computer. It is not automatically installed with the so Note: You can also download the latest version of all the documentate www.velocity11.com/support/support.html.	from the VWorks Help CD_ROM. s directory: ROM, as a file that you need to ftware. <i>tion from our website at</i>
Setting protocol rules About log and data files Setting log options	Online help	×

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.

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 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 <i>Device</i> 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 <i>Device</i> Diagnostics dialog box.		
	2. Click About.		
	The About <i>Device</i> Control message box appears displaying the current version of firmware.		
What this guide does	This guide does not cover the following:		
not cover	□ 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 w some newer features that were software and that are describe	ith BenchWorks software may not include e specifically added for use with VWorks ed 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:	
	U 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 <i>file name</i> .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 driverIf 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 Once installed, the following items are enabled: **the device drivers D** Tasks accoriated with the device

□ 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

provide?

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

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

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**.

De	vice Properties	
	General Device name	STR device
	Device type	Plate Pad, Standard 📃 💌
	Approach height (mm)	StoreX Incubator
	Allowed / prohibited labware	StoreX IO Pad
	Teachpoints	Storex/CytomatPLC Device Driver (from plugin)
	Device is accessible from robot "Human Robot"	Teleshake, High-speed/1536
	Bar code Readers	Teleshake, Standard
	Device has south side BCR	Thermo Labsystems Multiskan Ascent Reader
	Device has west side BCR	Ultramark

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

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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.

😹 Device File - 1 Diagnostics	×
E-S Bravo Pipettor	
Device diagnostics	

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.

If you are using VWorks4 software

To open Diagnostics:

Procedure 2

- 1. Click the **Device File** tab.
- 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.

Initialize selected devices
Close selected devices
Delete selected devices
Device diagnostics

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.

Initialize selected devices	
Close selected devices	
Delete selected devices	
Device diagnostics	

The device's diagnostics dialog box opens.

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 admi Velocity11 devices.	nistrator in charge of managing		
Profiles defined	A profile contains the initialization between a device and device driv VWorks or BenchWorks software t	n settings needed for communication rer. The data in a profile is used by o identify each device on the network.		
	A profile can also contain other b change once set up.	asic settings that you are unlikely to		
	Because profiles identify device d device driver device must have its	lriver devices on the network, each s own profile.		
	You can create, modify, and delete	e profiles as needed.		
Stored settings	Profiles are stored in the Windows	s 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			

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	To set the general properties for a device:		
properties	1. Click the Device Manager tab.		
	Select the device from the Device List toolbar. (Expand the device name, if necessary.)		
	<i>Note:</i> 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.		
	□ General VCode □ Device name VCode (3k) Bar Code Print and Apply Station □ Approach height (mm) □ ⊥ □ Allowed / prohibited laware ⊥ □ Teachpoints □ □ Bar code Readers □ □ "VCode (3k) Bar Code Print and Apply Station		
	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.		
	 In the <i>Device</i> 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.

1			
	Ξ	Teachpoints	
		Device is accessible from robot "robot"	Yes
		Teachpoint for robot "robot"	No
	Ξ	Bar code Readers	Yes
		Device has south side BCR	No ^h S
l		Device has west side BCR	No

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

Teachpoints	
Device is accessible from robot "Robot"	Yes
Teachpoint for robot "Robot"	
Bar code Readers	Teachpoint 1
Device has south side BCR	No
Device has west side BCR	No

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

To set the barcode readers property:

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

Bar code Readers		
Device has south side BCR	Yes	
South side BCR COM port		
Device has west side BCR	No	
Device has north side BCR	No	
Device has east side BCR	No	

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

Setting location
propertiesNote: 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.

Location 'Stage1'	
Use linked location	No
Location is accessible from robot 'StaubliRobot'	Yes
Teachpoint for robot 'StaubliRobot'	
Approach height (mm)	9
Allowed / prohibited labware	
Location 'Stage1' has south side BCR	No
Location 'Stage1' has west side BCR	No
Location 'Stage1' has north side BCR	No
Location 'Stage1' has east side BCR	No
Labware	1536 Greiner 783092 PS blk clr btm LoBase

- 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.

Cocation 'Stage1'		
Use linked location	Yes	
Device to use	Staubli 💦	
Location is accessible from robot 'Staubli'	Staubli	
Approach height (mm)	TecanEvo	

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 <i>VWorks Version 3 Automation Control User Guide</i> or <i>BenchWorks Automation Control User Guide</i> 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	When you add the Sub Process task, a new sub-process is started in the		

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.

Protocol Task Pa	arameters	×
Task Settings	Advanced Settings	
	Add New	
	Rename Existing	
Sub Process	(Multimek) 1	
Use Sub Prod	cess	
Sub Process	(Multimek) 1	•

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

Associating the subprocess 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

See	
"About device drivers" on page 7	
"Setting the properties for a device" on page 16	
"Adding devices" on page 10	
VWorks Version 3 Automation Control User Guide	
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:
	\Box 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	Scripts can be written in two ways:
written	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.

Protocol Task P	arameters ×
Task Settings	Advanced Settings
Enter pre-tas script from ar Browse	k script or click the browse button to load a 1 external file.
for(x in task)) print("task."+x+"="+task[x])

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
	BenchWorks Automation Control User Guide
Adding tasks to protocols	VWorks Version 3 Automation Control User Guide
	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 nameSome 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.

Append the following to the output filename:
Date/timestamp

South bar code
 West bar code
 North bar code

East bar code

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).

Save As				? ×
Save in:	C RVSI	-	+ 🗈 📸 🖬 -	
My Recent Documents Desktop My Documents	<pre> output.txt output_C10004032' output_C10004033' output_C1000403' output_C1000403' output_C100040' output_C100040' output_C100040' output_C100040' output_C100040' output_C100040' output_C10004' output_C1004' output_C100' output_C10' output_C10' output_C10' output_C10' output_C10' output_C10'</pre>	9.txt <pre> output_0 output_0</pre>	C100040371.txt C100040372.txt C100040373.txt C100040374.txt C100040375.txt C100040376.txt C100040377.txt C100040378.txt lerResults_C100040330.tx lerResults_C100040331.tx lerResults_C100040333.tx	ViaRe. ViaRe.
My Computer My Network Places	File name: out	put.txt Files	•	Save Cancel

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.

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	ming motors Initializing a device homes motors that do not track their position al their line of travel. Homing a motor moves it until it triggers an even called a home flag. This tells the motor its location.			
	The motors on some devices autopositions when the device is turn must be initialized to be homed.	omatically move to their home ed on. The motors on other devices		
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		
		Gening diagnostics" on page 12		
	Workflow for configuring devices	"Adding devices" on page 10		

26 Chapter 1: Introduction

Fusion Device Driver User Guide

Fusion



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The PerkinElmer Fusion Reader is a device that measures absorbance, fluorescence, and luminescence in microplate samples. The Fusion Reader can be configured to work in lab automation systems running VWorks.

This chapter contains the following topics:

- □ "Workflow for configuring the Fusion Reader" on page 28
- □ "Creating a Fusion Reader profile" on page 29
- Getting Fusion Reader task parameters" on page 31
- □ "Managing Fusion Reader profiles" on page 33
- "Operating the Fusion Reader with diagnostics" on page 34

Workflow for configuring the Fusion Reader

Workflow		
	"Setting the properties for a device" on page 16.	
	Also, before you can configure the PerkinElmer Fusion Reader device driver, you must have installed it. For installation instructions, see	Ĵ
Before you start	Before you start, the computer that operates the Fusion Reader shoul be connected to the computer that is running VWorks and the Fusior software should be running.	d 1
	Read this topic if you are an administrator responsible for setting up devices in VWorks.	
About this topic	This topic presents the workflow for configuring the PerkinElmer Fusi Reader device driver.	on

step	iopic .
1	"Adding devices" on page 10
2	"Creating a Fusion Reader profile" on page 29
3	"Setting the properties for a device" on page 16

For information about	See
Device drivers	"About device drivers" on page 7
Setting Fusion Reader task parameters	"Setting Fusion Reader task parameters" on page 31
Using PerkinElmer Fusion Reader Diagnostics	"Operating the Fusion Reader with diagnostics" on page 34

Creating a Fusion Reader profile

About this topic	This topic describes how to create a profile for the Fusion Reader. Read this topic if you are an administrator responsible for setting up devices in VWorks.
Before you start	Before you create a profile, you must add the PerkinElmer Fusion Reader to the device manager.
Procedure	To create a Fusion Reader profile:

To create a Fusion Reader profile:

- 1. Open PerkinElmer Fusion Reader Diagnostics.
- 2. Click the **Profiles** tab.

rohile Management	
ronie name:	Host name (blank for localnost):
Create a new profile	Default output filename (local path on fusion controller computer):
Create a copy of this profile	
Rename this profile	Append the following attributes to the output filename:
Delete this profile	Date / time stamp: South bar code:
Update this profile	West bar code:
Initialize this profile	East bar code:
te: ce the first profile initialization attempt started (even if profile is closed and rei	: is made, new/changed host name will not take effect until VWorks is nitialized).

- 3. Click Create a new profile.
- 4. In the **Create Profile** dialog box, enter a name for the profile and click **OK**.

The name appears in the **Profile name** box.

5. In the **Profile Settings** area, set the following:

Setting	Comments
Host name	Host name or IP address of the Fusion Reader computer to which your lab automation system is attached.

Setting	Comments	
Default output filename	Path and name of the text file that the Fusion Reader will write data to.	
	!! IMPORTANT !! To prevent output data from being overwritten, manage output data files properly. See Related topics below for more information.	
Date/timestamp	Appends the output file name with the date and time of the read.	
South bar code	Appends the output file name with the selected bar code.	
U West bar code		
North bar code		
East bar code		

6. Click **OK** to save the profile and exit PerkinElmer Fusion Reader Diagnostics.

For information about	See
The next step	"Setting the properties for a device" on page 16
The workflow this procedure belongs to	"Workflow for configuring the Fusion Reader" on page 28
Opening diagnostics	"Opening diagnostics" on page 12
Adding the Fusion Reader to the device manager	"Adding devices" on page 10
Using Diagnostics	"Operating the Fusion Reader with diagnostics" on page 34
Using Fusion Reader tasks	"Setting Fusion Reader task parameters" on page 31
Profiles	"About profiles" on page 15
Preventing output file data from being overwritten	"About reader output files" on page 22

Setting Fusion Reader task parameters

About this topic	 When the Fusion Reader is added to the device manager, the tasks associated with the device become available in the protocol editor. When a task is added to a protocol, you need to set the parameters for it. This includes choosing which Fusion Reader to use and what properties to select for it. This topic describes the tasks and their parameters. Read this topic if you are: 		
	□ An administrator or technician responsible for creating protocols		
	An operator who wants to make changes to the Fusion Reader task parameters in a protocol		
	<i>Note:</i> Operators cannot save changes to protocols.		
About Fusion Reader tasks	The PerkinElmer Fusion Reader device driver adds three tasks to VWorks. These tasks are used to deliver commands to the Fusion Reader during the execution of a protocol and perform other functions in VWorks.		
	The Fusion Reader tasks are represented by icons in the Protocol Tasks toolbar:		
	READER Reset (PerkinElmer Fusion Reader)		
	READER Shutdown (PerkinElmer Fusion Reader)		
	READEN READEN READEN Read (PerkinElmer Fusion Reader)		
	Reset (PerkinElmer Fusion Reader)		
	This task initializes the Fusion Reader and can only be used in a pre- protocol process.		

There are no properties to set for this task in the Pre/Post Protocol Task Parameters toolbar.

Shutdown (PerkinElmer Fusion Reader)

This task, available only in the pre-protocol and post-protocol editors, shuts down the Fusion Reader's lights and fans. This would typically be used for a post-protocol process to increase the lifetime of the lamps.

There are no properties to set for this task in the Pre/Post Protocol Task Parameters toolbar.

Read (PerkinElmer Fusion Reader)

This task, available only in the protocol editor, reads the microplate samples.

Setting Read (PerkinElmer Fusion Reader) task parameters

To set the Read (PerkinElmer Fusion Reader) task parameters:

- 1. Add the Read (PerkinElmer Fusion Reader) task to the protocol process.
- 2. In the **Protocol Task Parameters** toolbar, make sure the **Task Settings** tab is displayed.
- 3. Select the Fusion Reader or Fusion Readers and click Add.

The device name moves to the right of the Add and Remove buttons.

Protocol Task Pa	arameters		×
Task Settings	Advanced Se	ttings	
			Fusion Reader.Reader Load
		Add>	
		< Remove	

4. Set the **Read properties**.

Property	Comments
Assay name	Selects the assay program created using the Fusion Reader software that you want to use for this task.
Map name	A map is a selection of wells on the plate to be read, created in the Fusion Reader software. The map name selects the map you want to use for this task.
Output File	Selects the text file that you want to write the label identification data to (you must first create the file).
	!! IMPORTANT !! To prevent output data from being overwritten, manage output data files properly. See Related topics below for more information.
Comments	Any information about this task that you want to include. This text is included in the output file.

5. Select **File** > **Protocol File** > **Save** to save the changes to the protocol file.

For more information about	See
The workflow that this procedure belongs to	"Workflow for configuring the Fusion Reader" on page 28
Creating protocols, pre-protocols, post-protocols, and pipette processes	<i>VWorks Version 3 Automation Control</i> <i>User Guide</i>
Opening Fusion Reader device properties page	"Setting the properties for a device" on page 16

For more information about	See
Using diagnostics	"Operating the Fusion Reader with diagnostics" on page 34
Preventing output file data from being overwritten	"About reader output files" on page 22
Initializing a device	"About device initialization" on page 25

Managing Fusion Reader profiles

About this topic	This topic describes how administrators and technicians can manage Fusion Reader profiles.
Managing profiles	<section-header></section-header>
	About OK Cancel

- 3. Select a profile from the **Profile name** list.
- 4. Perform the management task.

Management tasks include the following:

- Updating the profile. Use this command to save edits to an existing profile.
- Copying a profile.

- Renaming a profile.
- Deleting a profile.

Related topics

For more information about	See
Opening Fusion Reader device properties page	"Setting the properties for a device" on page 16
Using Fusion Reader Diagnostics	"Operating the Fusion Reader with diagnostics" on page 34
Preventing output file data from being overwritten	"About reader output files" on page 22

Operating the Fusion Reader with diagnostics

About this topic	This topic describes how to:		
	□ Initialize the Fusion Reader		
	□ Shut down the Fusion Reader		
	Read a microplate		
	□ Move the plate carrier		
	Read this topic if you are an operator who wants to troubleshoot or operate the Fusion Reader using direct commands.		
About controlling the Fusion Reader	The Fusion Reader is controlled directly through the diagnostics software Controls tab.		

	PerkinElmer Fusion TM Reader Diagnostics v5.0.0			
	Controls Profiles Hardware Control			
	Reset (on HW error or after shutdown) Shutdown instrument			
	Read Plate			
	Assay map name (opt): Plate comment (opt): Sample edit box			
	Apply assay selection Do not read plate Apply assay selection Read plate Use current assay selection Read plate Stop (abort reading plate)			
	Plate Control			
	Move plate carrier in Move plate carrier out			
	Current State Plate carrier in(Only valid in Idle state):			
	Plate loaded (Only valid in Idle state, with plate carrier in):			
	About OK Cancel			
u start	Before you can send commands to the Fusion Reader, or receive status			
	information from the Fusion Reader, you need to initialize it.			
	There are two equivalent ways to do this.			
	To initialize the Fusion Reader:			
	1. Open PerkinElmer Fusion Reader Diagnostics.			
	Click the Profiles tab.			
	3. Select a profile from the Profile name list.			
	4 Click Initialize this profile			
	To woost communications with the Excise Decider			
	1 Open Perkin Elmer Fusion Reader Diagnostics			
	2 Click the Profiles tab			
	2. Click life rivilles lab.			
	5. Select a prome nom me Fronte name list.			
	4. Click the Lontrols tab.			
	5. UICK Keset .			
own the der	To preserve the lifetime of the Fusion Reader's lamps, shut down the device when not in use.			
	To shut down the Fusion Reader:			
	1. Open PerkinElmer Fusion Reader Diagnostics.			
	2. Click the Controls tab.			
	3. Click Shutdown instrument.			

Selecting an assay	To select an assay without reading:		
	1. Open PerkinElmer Fusion Reader Diagnostics.		
	2. Click the Controls tab.		
	3. Click Apply assay selection, D	o not read plate.	
Reading a plate	To select an assay and read a plate:		
	1. Open PerkinElmer Fusion Reader Diagnostics.		
	2. Click the Controls tab.		
	3. In the Read Plate area, select an assay from the Assay name list.		
	4. Optionally, select a map from	the Assay map name list.	
	5. Click Apply assay selection, Read plate.		
	To read a plate using the currently selected assay:		
	1. Open PerkinElmer Fusion Reader Diagnostics.		
	2. Click the Controls tab.		
	3. Click Use current assay selection, Read plate.		
	You can also select an assay without reading the plate at that time. However, the next time a plate is read, it will use this selection.		
Moving the plate	To move the plate carrier into	o the Fusion Reader:	
carrier	1. Click Move plate carrier in.		
	2. Click the Profiles tab.		
	3. Click Initialize this profile.		
	The Plate carrier in light turns green indicating that the plate carrier is inside the Fusion Reader and the Plate loaded light turns green indicating that the carrier holds a plate.		
	To move the plate carrier out of the Fusion Reader:		
	1. Click Move plate carrier out.		
	2. Click the Profiles tab.		
	3. Click Initialize this profile.		
Related topics			
	For more information about	See	
	Fusion Reader tasks	"Setting Fusion Reader task parameters" on page 31	
	Creating Fusion Reader profiles	"Creating a Fusion Reader profile" on page 29	



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