

Microscan Barcode Reader

Device Driver Guide

**For Research Use Only. Not for use in
diagnostic procedures.**

Original Instructions



Agilent Technologies

Notices

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Contents

Preface	v
About this guide	vi
Accessing product user information	vii
Reporting problems	x
1. Introduction	1
About devices	2
Adding and configuring a device in the VWorks software	3
About Diagnostics	4
Opening Diagnostics	5
About profiles	6
About device initialization	6
2. Setting up a Microscan Barcode Reader	9
Workflow for setting up the Microscan Barcode Reader	10
Adding a Microscan Barcode Reader to a VWorks device file	11
Creating Microscan Barcode Reader profiles	15
Testing the Microscan Barcode Reader	17
Using the Scan bar code (Microscan Bar Code Reader) task	19
Using JavaScript to set task parameters	21



Preface

This preface contains the following topics:

- “About this guide” on page vi
- “Accessing product user information” on page vii
- “Reporting problems” on page x



About this guide

Who should read this guide

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

Job role	Responsibilities
Installer	Unpacks, installs, and tests the device before it is used.
Integrator	Configures hardware and writes software.
Lab manager, administrator, or technician	<ul style="list-style-type: none">• Manages the automation system that contains the device• Develops the applications that are run on the system• Develops training materials and standard operating procedures for operators
Operator	Performs the daily production work on the device and solves routine problems.

What this guide covers

This guide describes how to configure the Microscan Laser Barcode Scanner in the VWorks software using the Microscan Barcode Reader device-driver plugin. Once configured, you can use the tasks and Diagnostics associated with the device.

Software version

This guide documents Microscan Barcode Reader Diagnostics version 13.10.

Related guides

Use this guide in connection with the following:

- [VWorks Automation Control Setup Guide](#). Explains how to define labware and labware classes, liquid classes, and pipetting techniques, and how to track and manage labware in storage.
- [VWorks Automation Control User Guide](#). Explains how to create protocols, and set task parameters for each device in the system.
- The workstation installation instructions provided to you by Agilent Technologies.
- The specific device user guide for the devices in your workstation.

Accessing product user information

About this topic

This topic describes the different formats of user information and explains how to access it for the Agilent Automation Solutions products.

Where to find user information

The Automation Solutions user information is available in the following locations:

- *Knowledge base.* The help system that contains information about all the Automation Solutions products is available from the Help menu within the VWorks software.
- *PDF files.* The PDF files of the user guides are installed with the VWorks software and are on the software CD that is supplied with the product. A PDF viewer is required to open a user guide in PDF format. You can download a free PDF viewer from the internet. For information about using PDF documents, see the user documentation for the PDF viewer.
- *Agilent website.* You can search the online knowledge base or download the latest version of any PDF file from the Agilent website at www.agilent.com/chem/askb.

Accessing safety information

Safety information for the Agilent Automation Solutions devices appears in the *Automation Solutions Products General Safety Guide* and in the corresponding device safety guide or user guide.

You can also search the knowledge base or the PDF files for safety information.

Using the knowledge base

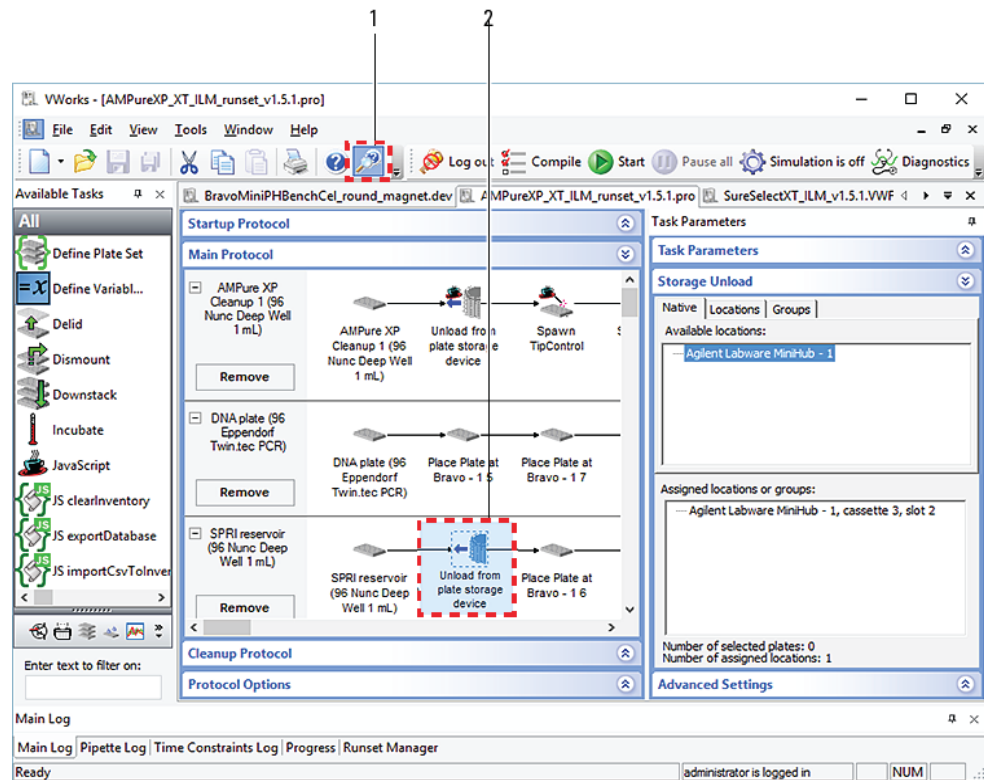
Knowledge base topics are displayed using web browser software such as Microsoft Internet Explorer and Mozilla Firefox.

Note: If you want to use Internet Explorer to display the topics, you might have to allow local files to run active content (scripts and ActiveX controls). To do this, in Internet Explorer, open the **Internet Options** dialog box. Click the **Advanced** tab, locate the **Security** section, and select **Allow active content to run in files on my computer**.



To open the knowledge base, do one of the following:

- From within VWorks software, select **Help > Knowledge Base** or press F1.
- From the Windows desktop, do one of the following:
 - *Windows 10.* Select **Start > All Apps > Agilent Technologies > VWorks Knowledge Base**.
 - *Windows 7.* Select **Start > All Programs > Agilent Technologies > VWorks > User Guides > VWorks Knowledge Base**.

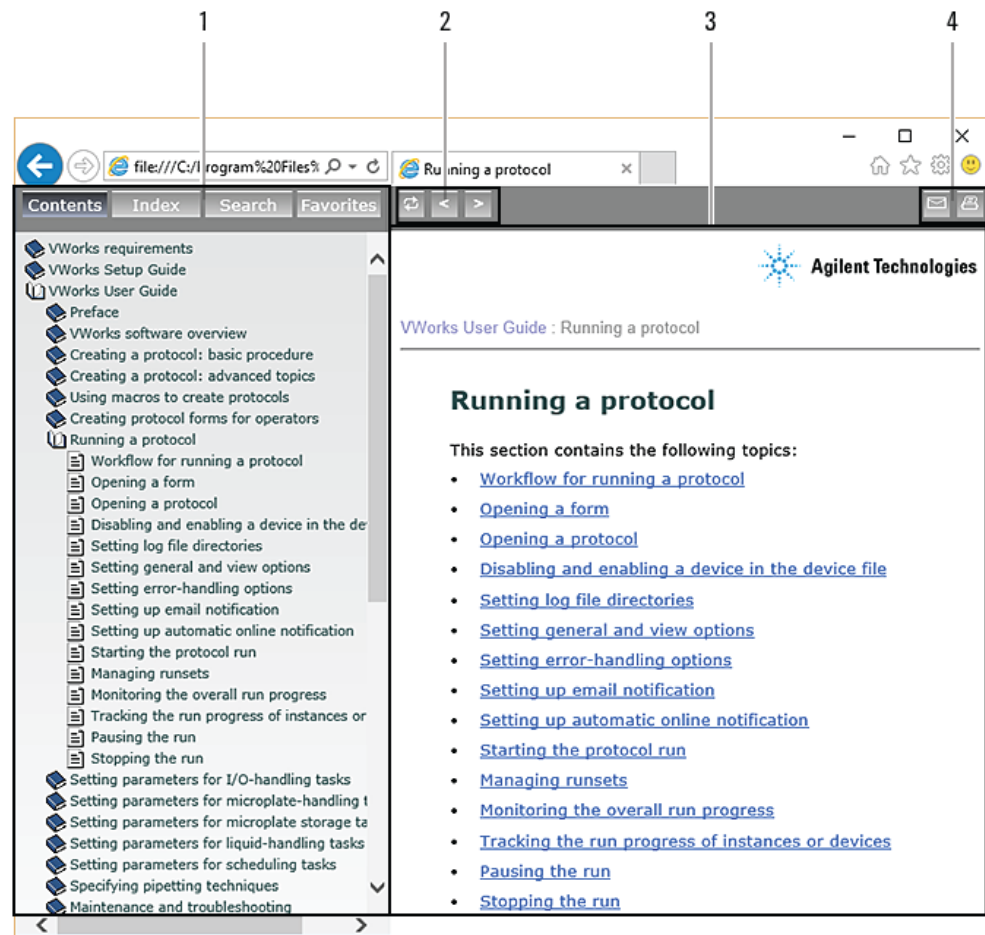
Opening the help topic for an area in the VWorks window



To access the context-sensitive help feature:

- 1 In the main window of the VWorks software, click the help button . The pointer changes to . Notice that the different icons or areas are highlighted as you move the pointer over them.
- 2 Click an icon or area of interest. The relevant topic or document opens.

Features in the Knowledge Base window



Item	Feature
1	<p><i>Navigation area.</i> Consists of four tabs:</p> <ul style="list-style-type: none"> • <i>Contents.</i> Lists all the books and the table of contents of the books. • <i>Index.</i> Displays the index entries of all of the books. • <i>Search.</i> Allows you to search the Knowledge Base (all products) using keywords. You can narrow the search by product. • <i>Favorites.</i> Contains bookmarks you have created.
2	<p><i>Navigation buttons.</i> Enable you to navigate through the next or previous topics listed in the Contents tab.</p>
3	<p><i>Content area.</i> Displays the selected online help topic.</p>
4	<p><i>Toolbar buttons.</i> Enable you to print the topic or send documentation feedback by email.</p>

Reporting problems

Contacting Automation Solutions Technical Support

Note: If you find a problem with the Microscan Barcode Reader, contact Automation Solutions Technical Support. For contact information, see Notices on the back of the title page.

Note: You can also send a software bug report from within the VWorks software.

Reporting hardware problems

When contacting Agilent Technologies, make sure you have the serial number of the device or workstation ready.

Reporting software problems

When you contact Automation Solutions Technical Support, make sure you provide the following:

- Short description of the problem
- Software version number
- Error message text (or screen capture of the error message dialog box)
- Screen capture of the About VWorks software dialog box
- Relevant software files

To find the VWorks software version number:

In the VWorks software, select **Help > About VWorks**.

To find the Diagnostics software version number:

- 1** Open **Diagnostics**.
- 2** Read the version number on the title bar of the diagnostics window.

To send compressed protocol and associated files in VZP format:

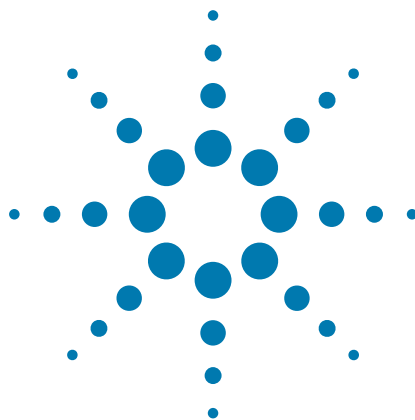
In the VWorks software, select **File > Export** to export and compress the following files:

- Protocol file
- Device file (includes the device profile and teachpoint file)
- Labware definitions
- Liquid classes
- Pipette techniques
- Hit-picking files
- Plate map files
- Barcode files
- Error library
- Log files
- Form file (*.VWForm)

Reporting user guide problems

If you find a problem with this user guide or have suggestions for improvement, send your comments using one of the following methods:

- Click the feedback button () in the online help.
- Send an email to documentation.automation@agilent.com.



1

Introduction

This chapter provides an overview of setting up a device in the VWorks software.

Before reading this guide, you should be familiar with the VWorks software user interface. To set up and use the Microscan Barcode Reader, become familiar with the content in this guide as well as the guides for the other devices in your workstation that use VWorks software and interface with the Microscan Barcode Reader.

This chapter contains the following topics:

- [“About devices” on page 2](#)
- [“Adding and configuring a device in the VWorks software” on page 3](#)
- [“About Diagnostics” on page 4](#)
- [“Opening Diagnostics” on page 5](#)
- [“About profiles” on page 6](#)
- [“About device initialization” on page 6](#)



About devices

What is a device?

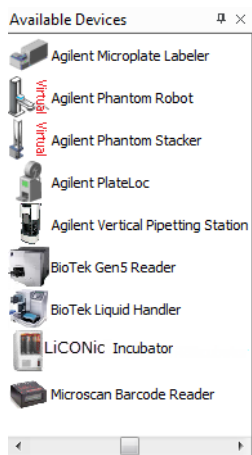
In the VWorks software, a device is an item in your lab automation workstation that can be added to the VWorks device file. A device can be a robot, an instrument, or a location in the lab automation workstation that can hold a piece of labware. The following are examples of devices:

Examples of devices:

- BenchCel Microplate Handling Workstation
- PlateLoc Sealer
- Microplate Labeler
- Labware Stacker
- Platepad
- A third-party device

What is a device plugin?

A device plugin is software that enables the VWorks software to control and communicate with the specific type of device. Each type of device that you operate with VWorks software requires a device plugin. When a device plugin is installed in the VWorks software, an icon for the device appears in the **Available devices** list.



Functions of a device plugin

A device plugin enables the following:

- *Tasks associated with the device.* Device-specific tasks appear in the Protocol Tasks list and are available for use in creating protocols.
- *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.

About device files

To communicate with and to control the robot and integrated devices, the VWorks software uses a device file that contains the following information:

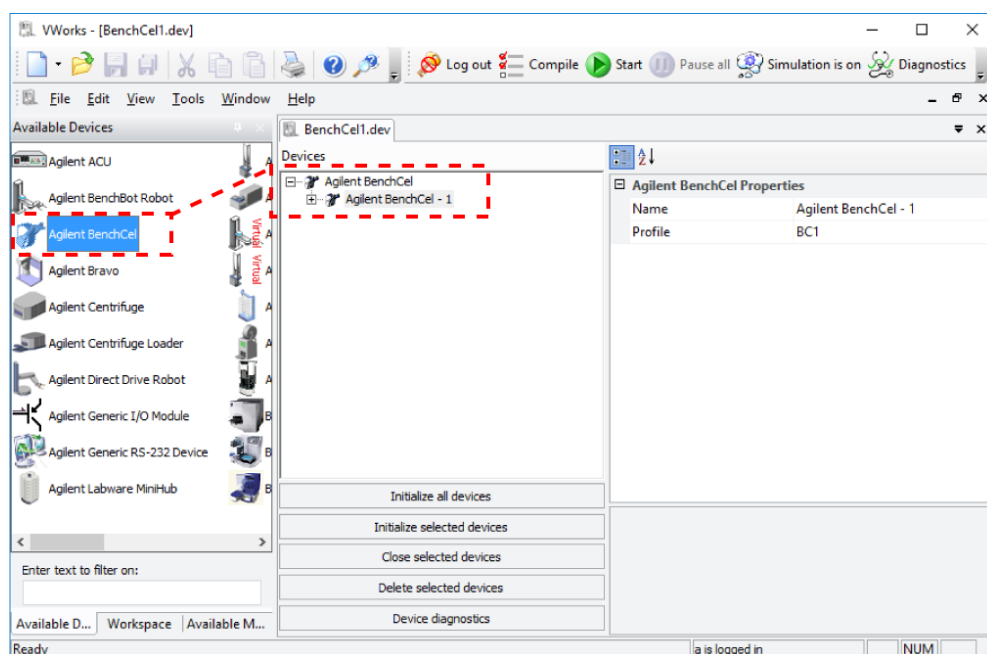
- List of devices the software will communicate with and control
- Type of each device (for example, the robot, PlateLoc Sealer, and any integrated device)
- Properties of each device (for example, approach height, allowed or prohibited labware, barcode reader access, and so on)
- The communication settings (profile) for communication between the devices and the VWorks software

You provide the device information in the VWorks window. The device information is stored in a device (.dev) file that is located in a folder you specify when saving the file.

Adding and configuring a device in the VWorks software

Workflow

To configure your lab automation workstation to use a device, you add the device to a device file and then set the properties for the device in the VWorks software. The VWorks software uses the information in the device file to communicate and operate the device within the workstation.



The sequence of steps required to add and configure a device to the VWorks software are as follows:

Step	For this task...	Do the following...
1	Create a new device file (if one does not exist), or	In the VWorks window, select File > New > Device . A Device File tab appears.
	Open an existing device file.	In the VWorks window, select File > Open , make sure All Files or Device Files (.dev) type is selected, and locate the appropriate device file.
2	Add the device to the device file.	In the Available Devices area, double-click the device that you want to add. Alternatively, you can drag a device from the Available Devices area into the Device File area.
3	Save the device file.	Select File > Save to save the device file. The file name appears in the Device File tab.
4	Create a profile for the device.	From the device file, open Diagnostics for the device and click Create a profile .
5	Set the device properties	Select the device in the Devices area of the device file and set the properties that appear in the left-side area of the device file, for the device.

About Diagnostics

Using Diagnostics

Diagnostics is the plugin software that you open from within the VWorks software. You use Diagnostics to do the following:

- Set up the device. You create a device profile that specifies the communication connection (for example, the Ethernet connection) and other properties for the specific device
- Troubleshoot problems with the device.

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.

Opening Diagnostics

About this topic

To establish communication between the host computer and the device, you initialize the device. You can initialize the device in the following ways:

- Diagnostics. To control the device using the Diagnostics software.
- VWorks window. To use VWorks to control the device, for example, to run a protocol, you initialize the devices in the VWorks window.

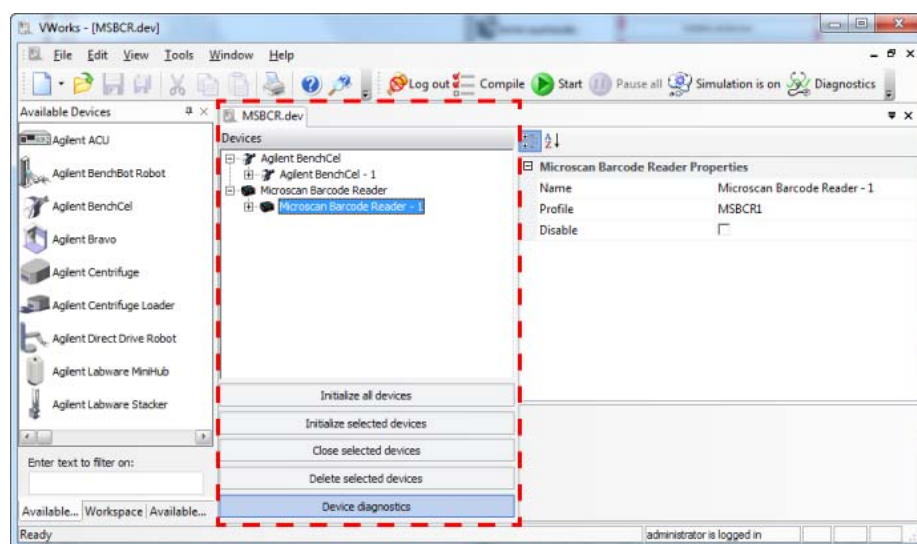
This topic describes what happens during initialization.

Procedure

To open Diagnostics:

- 1 In the **VWorks software** window, ensure the correct device file is open.
To open a device file, choose **File > Open**, and then select the appropriate device file (*.dev) in the **Open** dialog box.
- 2 In the **Devices** area of the opened device file tab, highlight the device icon, and then click **Device diagnostics**.

Alternatively, you can double-click the device icon.



The device's diagnostics dialog box opens.

About profiles

Profiles defined

A profile is a collection of settings, stored in the Windows registry, that manages how you connect to a device. A profile:

- Specifies the port or IP address used to establish communication between the device and the controlling computer.
- *For robots only.* References a teachpoint file. For a description of teachpoint files, see the specific robot's user guide.
- Specifies other settings specific for the device.

Creating a profile

You use the device's Diagnostics software to create and manage profiles.

In the VWorks software, each device in the device file requires a unique profile. The profile is referenced by a device file. For a detailed description of the relationships between the device file, profile, and teachpoint file, see the [VWorks Automation Control User Guide](#).

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

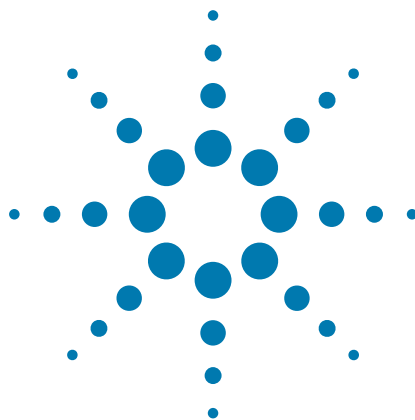
Initializing a device applies relevant parameters set in the device's profile.

Setting state and memory variables

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

1 Introduction

About device initialization



2

Setting up a Microscan Barcode Reader

This chapter contains the following topics:

- “Workflow for setting up the Microscan Barcode Reader” on page 10
- “Adding a Microscan Barcode Reader to a VWorks device file” on page 11
- “Creating Microscan Barcode Reader profiles” on page 15
- “Editing and managing profiles” on page 17
- “Testing the Microscan Barcode Reader” on page 17
- “Using the Scan bar code (Microscan Bar Code Reader) task” on page 19
- “Using JavaScript to set task parameters” on page 21



Workflow for setting up the Microscan Barcode Reader

The following table presents the workflow for setting up a Microscan Barcode Reader.

Step	For this task...	See...
1	Turn on the Microscan Barcode Reader.	User documentation for the Microscan Barcode Reader
2	Add the Microscan Barcode Reader to the VWorks software device file and set the device properties.	“Adding a Microscan Barcode Reader to a VWorks device file” on page 11
3	Create a profile and set the profile properties.	“Creating Microscan Barcode Reader profiles” on page 15
4	Verify the scanner can read a barcode.	“Testing the Microscan Barcode Reader” on page 17
5	Set the Microscan Barcode Reader task parameters in a VWorks protocol.	“Using the Scan bar code (Microscan Bar Code Reader) task” on page 19

Adding a Microscan Barcode Reader to a VWorks device file

About this topic

This topic describes how to add the Microscan Barcode Reader to a VWorks device file. The VWorks software uses the information in a device file to communicate with and operate devices within the lab automation system.

- *If your workstation was configured by Agilent Technologies.* The correct device configuration is already set up for communication with the Microscan Barcode Reader. You are not required to create a new device file or add the device in the software unless you want to reference different profiles, integrate additional devices with the workstation. To establish communication, you must initialize the device.
- *If you are configuring your workstation.* You must add the Microscan Barcode Reader device in the VWorks device file. You must also add in the software any devices that are physically integrated with the workstation.

For detailed information about device files and associations with profiles, teachpoints, and labware definitions, see the [VWorks Automation Control User Guide](#).

Creating a device file

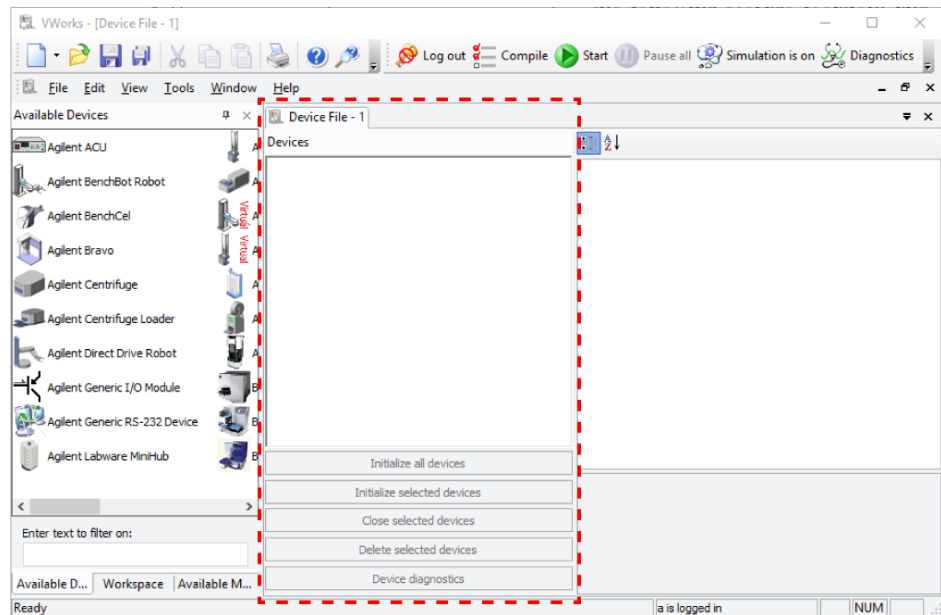
If you are setting up a new workstation configuration, you will need to create a device file.

To create a device file:

- 1 Log in to VWorks software as an administrator.
- 2 In the VWorks window, choose **File > New > Device**.
- 3 A Device File tab appears in the **VWorks** window.
- 4 Choose **File > Save**. In the **Save As** dialog box, type a file name (*.dev), select the following storage location, and click **Save**:
...\VWorks Workspace\Device Files. The file name appears in the Device File tab.

2 Setting up a Microscan Barcode Reader

Adding a Microscan Barcode Reader to a VWorks device file

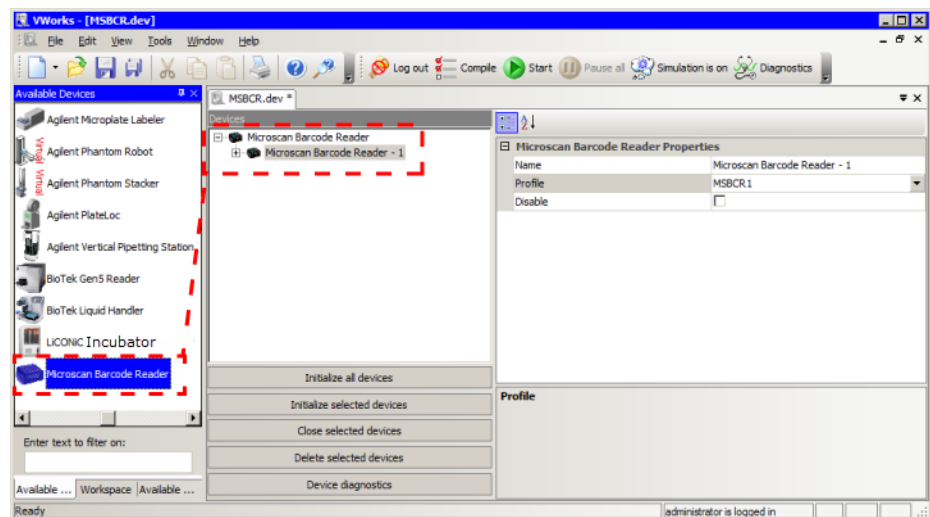


Adding a device

The following procedure describes how to add the Microscan Barcode Reader to a device file.

To add a Microscan Barcode Reader:

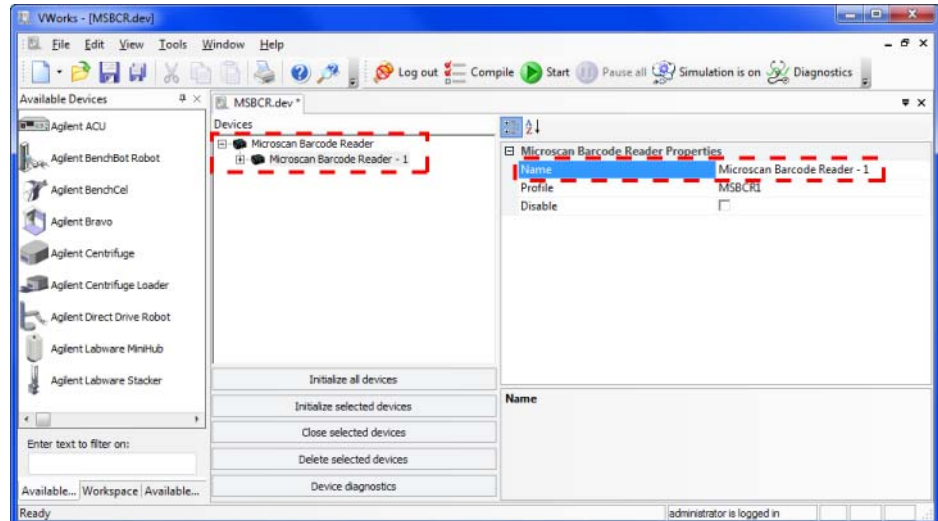
- 1 Open the device file that contains the other devices in your workstation. See [“Adding and configuring a device in the VWorks software” on page 3.](#)
- 2 In the **Available Devices** area, double-click the Microscan Barcode Reader icon. Alternatively, you can drag the icon from the **Available Devices** area into the **Device File** area.



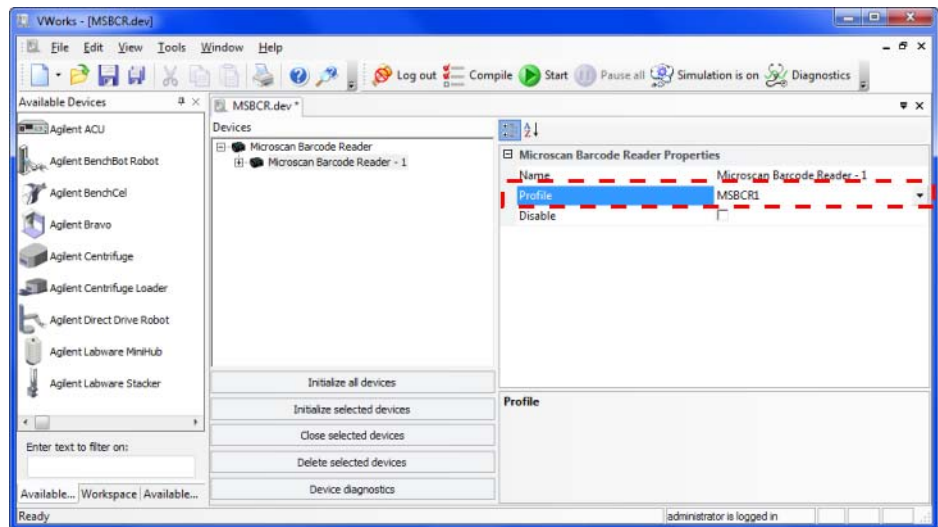
- 3 In the **Microscan Barcode Reader Properties** area, type a **Name** for the device. In the following example, the name shown is the default, **Microscan Barcode Reader - 1**.

2 Setting up a Microscan Barcode Reader

Adding a Microscan Barcode Reader to a VWorks device file



4 Select the **Profile**.



If the profile you want does not appear in the list, or if no profile appears in the list, you need to:

- Create a profile. See [“Creating Microscan Barcode Reader profiles” on page 15](#)
- Return to this step to select the profile.

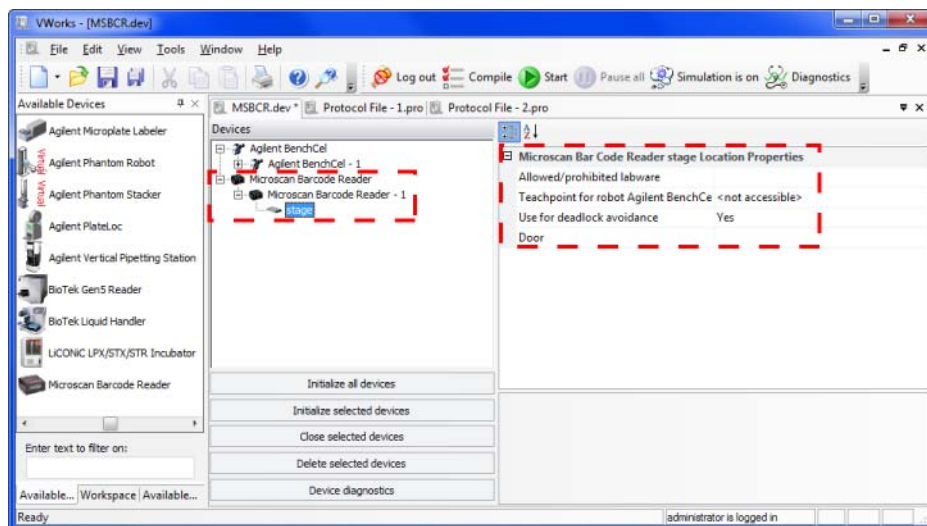
Note: Without a profile, you will not be able to establish communication with the device.

5 Select **File > Save** to save the device file.

6 In the **Devices** area, expand the Microscan Barcode Reader and select **Stage**.

2 Setting up a Microscan Barcode Reader

Adding a Microscan Barcode Reader to a VWorks device file



- 7 In the **Microscan Barcode Reader Stage Location Properties** area, select the following:

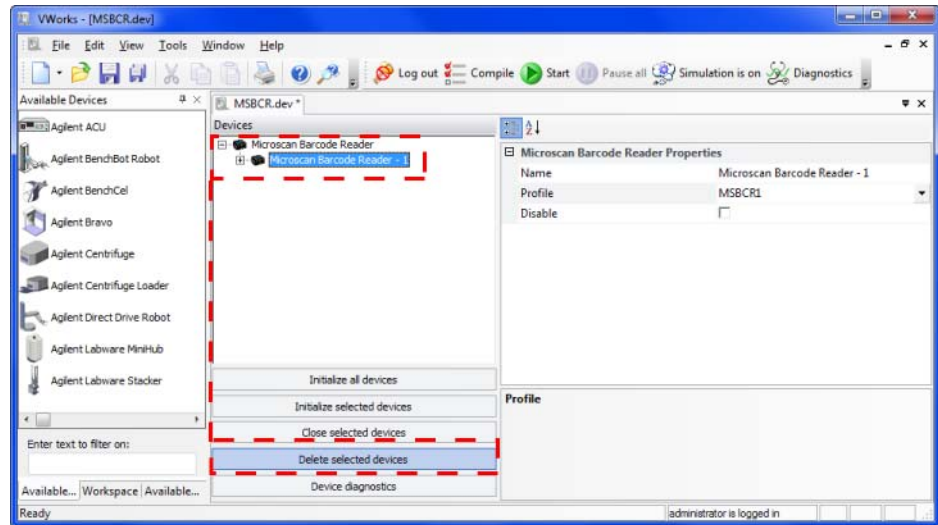
Property	Description
Allowed/prohibited labware	Permitted labware class for the selected location. Use this field only if you want to limit the labware types. For details on labware classes, see the VWorks Automation Control Setup Guide .
Teachpoint for robot <robot name>	The option for the Microscan Barcode Reader stage to be accessed by the robot configured in the workstation.
Use for deadlock avoidance	The option to use the Microscan Barcode Reader stage as a location to avoid a deadlock when executing a protocol.
Door	The option to set up an automated pass-through for a device that has a gate or door. See the VWorks Automation Control User Guide for more information.

- 8 In the **Devices** area, select the Microscan Barcode Reader, and then click **Initialize selected devices** to establish communication with the device.

Deleting a Microscan Barcode Reader from the device file

To delete a Microscan Barcode Reader from the device file:

- 1 In the VWorks window, select the Microscan Barcode Reader you want to delete in the **Devices** area.
- 2 Click **Delete selected devices**.



Creating Microscan Barcode Reader profiles

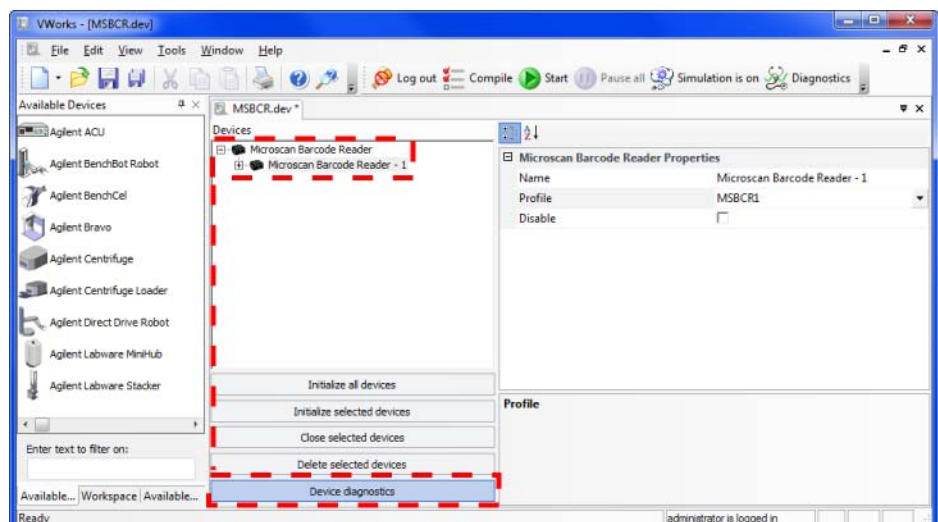
About this topic

This topic explains how to create a new profile for the Microscan Barcode Reader. For more information on profiles, see [“About profiles” on page 6](#).

Creating a Microscan Barcode Reader profile

To create a Microscan Barcode Reader profile:

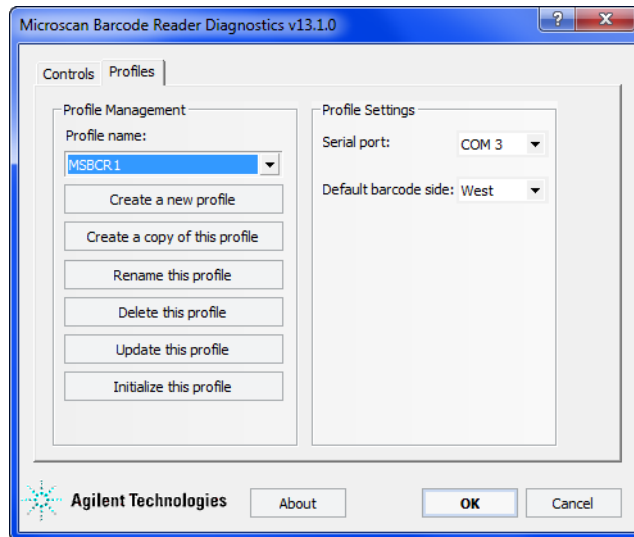
- 1 In the **Devices** area, select the Microscan Barcode Reader, and then click **Device diagnostics**.



The Microscan Barcode Reader Diagnostics dialog box opens.

2 Setting up a Microscan Barcode Reader

Creating Microscan Barcode Reader profiles



- 2 If it is not already displayed, click the **Profiles** tab.
- 3 In the **Profile Management** area, click **Create a new profile**. The **Create Profile** dialog box opens.
- 4 Type a name, and click **OK**. The name appears in the **Profile Management** area.
- 5 In the **Profile Settings** area, set the following parameters:

Profile parameter	Description
Serial Port	<p>The controlling computer COM port that is connected to the Microscan Barcode Reader.</p> <p><i>Note:</i> The Serial Port parameter will be automatically defined when a USB-to-serial adapter is connected to the computer. You might need to lookup the port assigned to this device in the Windows Device Manager.</p> <p>Occasionally, a port number is reassigned for a USB-to-serial connection if you disconnect and reconnect the device. If this happens, you must verify that the correct Serial Port is set in each profile.</p>
Default barcode side	<p>The side of the labware the barcode is on, East, West, North, or South.</p> <p><i>Note:</i> This is the side that is used when testing the scanner in Diagnostics. When running a protocol, you specify the side in the Scan Barcode task.</p>

- 6 Click **Update this profile** to save the changes.
- 7 Click **Initialize this profile** to establish communication with the Microscan Barcode Reader.

Editing and managing profiles

Editing a profile

To edit a profile:

- 1 In the Microscan Barcode Reader Diagnostics **Profiles** tab, select the profile you want to edit in the **Profile Management** area.
- 2 Modify the profile information.
- 3 When you are finished, click **Update this profile** to save the changes.

Managing profiles

In the Microscan Barcode Reader Diagnostics **Profiles** tab, you can select an existing profile, and then rename, copy, or delete the profile.



Testing the Microscan Barcode Reader

About this topic

This topic describes how to use Diagnostics to test barcode scanning with the Microscan Barcode Reader.

Before you start

Make sure you have a labware that has a barcode label.

Procedure

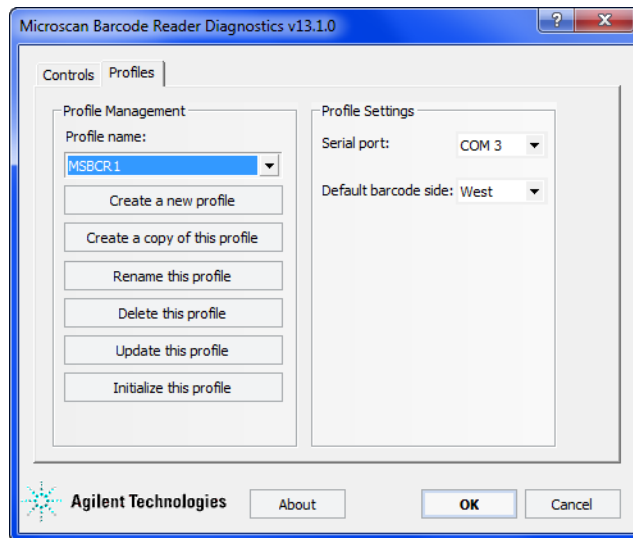


WARNING Class II laser hazard. Looking directly at the laser beam can result in serious eye injury. Do not look directly at the laser beam.

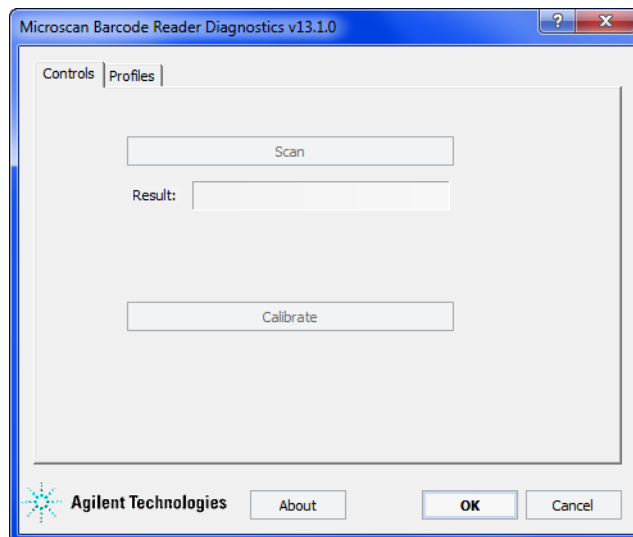
To test the barcode scanning:

- 1 Place the labware on the Microscan Barcode Reader platepad and make sure the barcode label faces the Microscan Barcode Reader mirror.
- 2 Open **Microscan Barcode Reader Diagnostics**.

- 3 In the **Profiles** tab, select the Microscan Barcode Reader profile from the **Profile** list, and click **Initialize this profile**.



- 4 Click the **Controls** tab.



- 5 Click **Scan**. The Microscan Barcode Reader turns on briefly to scan the barcode label. One of the following messages appears next to **Result**:

Scan result message	Description	Next step
<barcode text>	The barcode was successfully scanned	The setup is complete. No further adjustment is required.
No barcode found	Barcode scanning was not successful.	Proceed to step 6 .

- 6 If the No barcode found message appears, click **Scan** again, and check that the barcode scanner laser beam is projected onto the vertical center of the barcode label.

If the laser beam is not at the vertical center of the label, adjust the scan angle of the Microscan Barcode Reader mirror.

- 7 To optimize the scanner settings, click **Calibrate**.


Note: During the calibration process, the scanner attempts various settings to determine the optimum decode rate for the given conditions.

- 8 Repeat the scan.

Using the Scan bar code (Microscan Bar Code Reader) task

For information on creating protocols, see the [VWorks Automation Control User Guide](#).

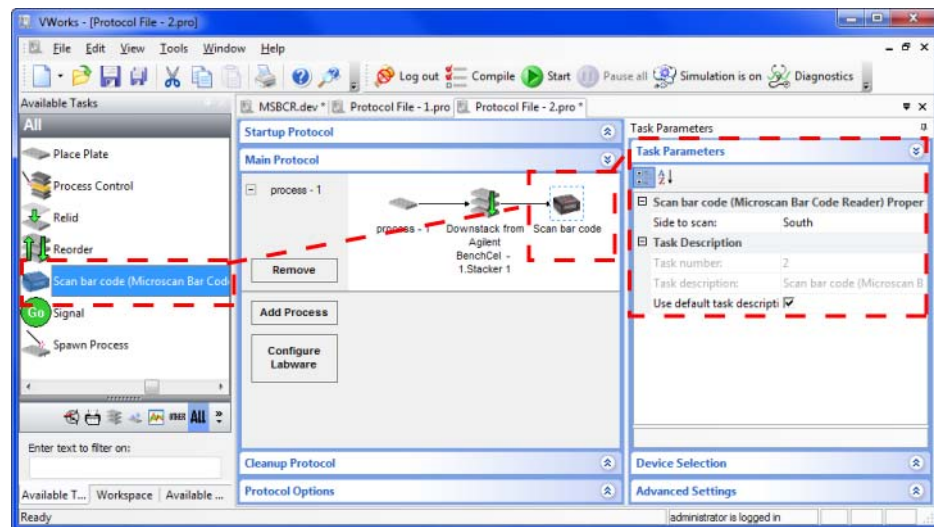
Description

The Microscan Barcode Reader device driver adds one task to the VWorks software. The Scan bar code task ( Scan bar code (Microscan Bar Code Reader)) instructs the Microscan Laser Barcode Scanner to scan a barcode.

Task is available for...	Task is available in...
Microscan Laser Barcode Scanner	Main Protocol

Adding the Microscan Bar Code Reader task to a protocol

In the **Available Tasks** area, double-click the **Scan bar code** task. Alternatively, drag a task from the **Available Tasks** area into the Protocol area. The task icon appears in the Protocol area.



Setting the task parameters

After adding the Scan bar code task at the desired point in the protocol, set the following parameters in the **Task Parameters** area:

2 Setting up a Microscan Barcode Reader

Using the Scan bar code (Microscan Bar Code Reader) task

The screenshot shows the 'Task Parameters' dialog box. It has a title bar 'Task Parameters' and a close button. Below the title bar is a section 'Task Parameters' with a dropdown arrow. Under this, there is a section 'Scan bar code (Microscan Bar Code Reader) Properties'. This section contains a 'Side to scan' field with the value 'South'. Below this is a 'Task Description' section with a 'Task number' field containing '2', a 'Task description' field containing 'Scan bar code (Microscan Ba', and a 'Use default task descriptic' checkbox which is checked. At the bottom of the dialog are two expandable sections: 'Scan bar code (Microscan Bar Code Reader) Properties' and 'Advanced Settings'.

Parameter	Description
Side to scan	The side of the labware on which the barcode label is attached (South, North, East, West).
Task description	<p>The option to change the task description.</p> <p>Clear the Use default task description check box and type a description in the Task description area.</p>

Selecting the device

If you have more than one Microscan Barcode Reader, you must select the device you want to perform the task. To do this, click **Device Selection**, and double-click the device you want to use for this task from the **Devices available to perform this task** area. The selected device appears in the **Devices involved in** area.

The screenshot shows the 'Task Parameters' dialog box with the 'Device Selection' section expanded. It contains two main areas: 'Devices involved in' and 'Devices in backup pool'. Below these are two buttons: 'Use earlier' and 'Use later'. At the bottom is a section 'Devices available to perform task:' which contains a list of devices. The first device, 'Microscan Barcode Reader - 1stage', is highlighted with a red box. Below it is another device, 'Microscan Barcode Reader - 2stage'.

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 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

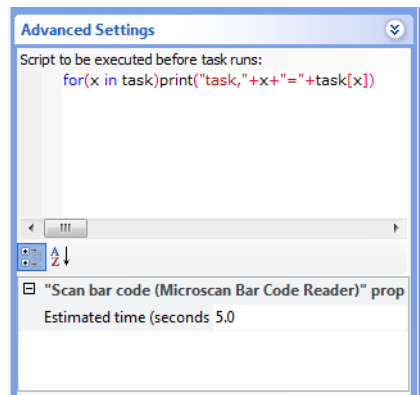
This topic describes the use of JavaScript to set task parameters in a protocol.

Where scripts are written

- Directly into the box in the Advanced Settings tab of the Task Parameters area
- 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, see the [VWorks Automation Control User Guide](#).

2 Setting up a Microscan Barcode Reader

Using JavaScript to set task parameters



Device Driver Guide

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