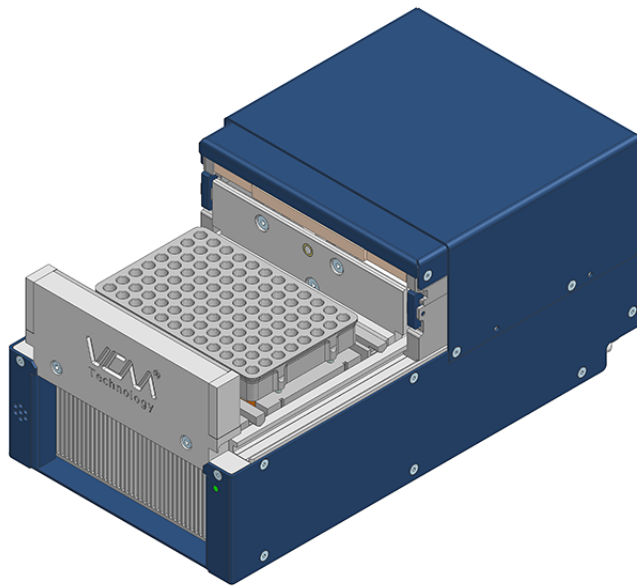


Bravo ODTC
(On-Deck Thermal Cycler)

User Guide



Original Instructions

Notices

Manual Part Number

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Contact Information

Agilent Technologies Inc.
Automation Solutions
5301 Stevens Creek Blvd.
Santa Clara, CA 95051
USA

Web:
<https://www.agilent.com>

Contact page:
<https://www.agilent.com/en/contact-us/page>

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WARNING

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CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

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Preface

This preface contains the following topics:

- “About this guide” on page vi
- “Accessing user guides” on page viii

About this guide

Who should read this guide

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

Job role	Responsibilities
Integrator	Someone who writes software and configures hardware controlled by VWorks Automation Control.
Lab manager, administrator, or technician	Someone who is responsible for: <ul style="list-style-type: none">• Developing the applications that are run using VWorks Automation Control• Developing training materials and standard operating procedures for operators
Operator	Someone who performs the daily production work using VWorks software and solves routine problems. Your organization may choose to create its own procedures for operators including the procedures in this guide.

What this guide covers

This guide describes the Bravo On-Deck Thermal Cyclers (ODTC) accessory, including:

- ODTC components
- How to set up the Bravo ODTC in the VWorks software

Table Terms used in this guide

Term	Description
VWorks Automation Control	VWorks software component that you use to create the protocols that run your automation devices.
VWorks Plus	The compliance-enabled <i>workstation</i> edition of the VWorks software. This edition includes VWorks and OpenLab Control Panel, Shared Services, Content Management, and Content Browser installed on a single computer.
VWorks Standard	The <i>workstation</i> edition of the VWorks software that is not compliance enabled. This edition includes VWorks and OpenLab Control Panel and Shared Services installed on a single computer.
Content Management (OpenLab component)	The secure data storage repository for VWorks compliance-enabled editions.
Control Panel (OpenLab component)	The user interface for Shared Services.

Term	Description
Microsoft Control Panel	Part of the Microsoft Windows operating system.
Shared Services (OpenLab component)	Set of administrative services that control VWorks user access and file storage. Shared Services are accessed via the Control Panel.

What is new in this edition

Updates	See...
Added the parameter Min Y range to the ODTC configuration	"Configuring ODTC in Bravo profile" on page 21

Software version

The Bravo ODTC requires the following software:

- VWorks software 14.2, which runs on the Microsoft Windows 10 64-bit operating system, or VWorks software 14.3, which runs on the Microsoft Windows 10 or Windows 11 64-bit operating system.
The SiLA XMLRPC Server, which is required, is installed with VWorks 14.2 and later.
- Inheco ODTC Script Editor 3.0.1
- Inheco ODTC Device Manager 1.1.0

Related guides

Inheco ODTC manuals

- [Inheco ODTC User and Installation Manual](#). Includes safety guidelines and maintenance procedures for the ODTC.
- [Inheco ODTC Device Manager User's Manual](#). Describes how to connect to the ODTC and control it using the ODTC Device Manager utility, including how to upload the methods to the ODTC.
- [Inheco ODTC Script Editor User's Manual](#). Describes how to create ODTC temperature initialization steps (pre-methods) and methods, and how to create an xml file for uploading the methods to the ODTC.

Note: Inheco user documentation is supplied with the ODTC on a USB drive.

VWorks and Bravo guides

- [Bravo Platform Site Preparation Checklist](#). Describes the prerequisites for installing the Bravo Platform, including the computer requirements.
- [G5562A, G5563A Bravo Platform Safety and Installation Guide](#). Includes the safety guidelines and installation procedures for the Bravo Platform.
- [Bravo Platform User Guide](#). Describes the Bravo components, how to set up and troubleshoot the Bravo Platform and accessories.

- [VWorks Automation Control Installation Guide](#). Describes how to use the VWorks software to set up devices, write protocols and create forms, run protocols, and troubleshoot problems.


Accessing user guides

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 user information is available in the following locations:

- *Knowledge base*. The help system for the Automation Solutions products is available from:
 - Help menu within the VWorks software: Select **Help > Knowledge Base** or press F1.
 - From the Windows desktop: Select **Start () > All Apps > Agilent Technologies > VWorks Knowledge Base**.

For guidelines on using the VWorks context-sensitive help and knowledge base features, see *Using the knowledge base*, below.

- *PDF files*. The PDF files of the user guides are installed with the VWorks software (C:\Program Files (x86)\Agilent Technologies\VWorks\UserGuides) and are available in the VWorks Knowledge Base.
- *Website*. You can search the online VWorks Knowledge Base or download the latest version of any PDF file from the Agilent website at <https://automation.help.agilent.com>.

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.

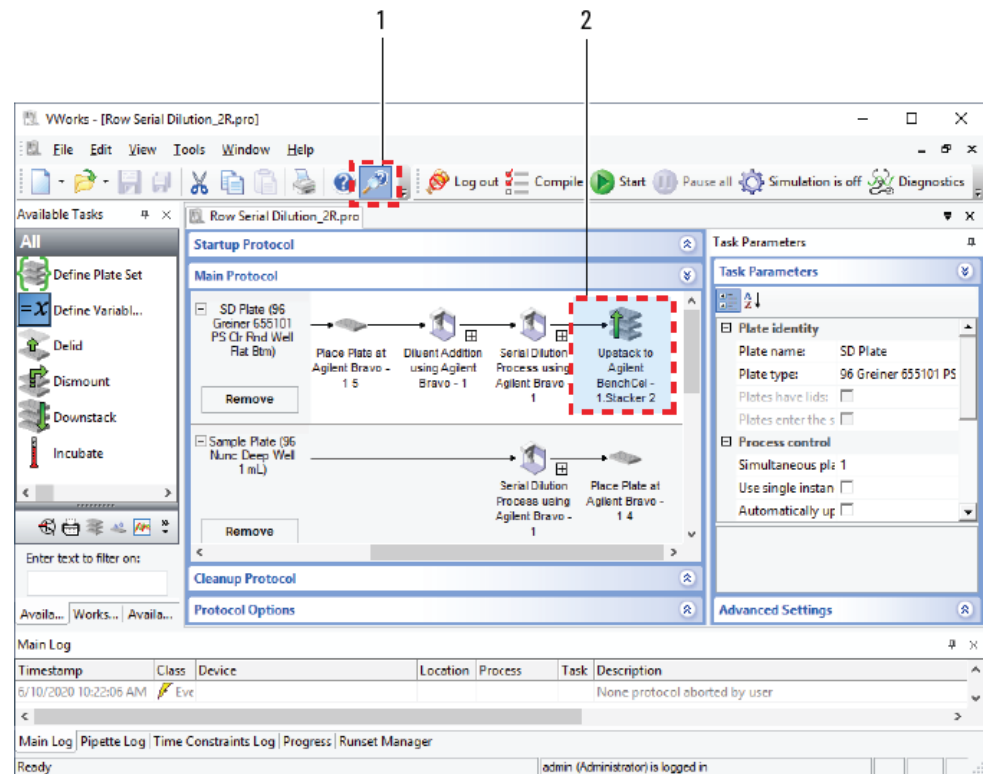
You can also search the knowledge base or the PDF files for safety information.

Using the knowledge base



Knowledge base topics are displayed using web browser software such as Microsoft Edge.

Note: If you want to use Microsoft Internet Explorer to display the topics, you might have to allow local files to run active content (scripts and ActiveX controls). For instructions, see the Microsoft user documentation.

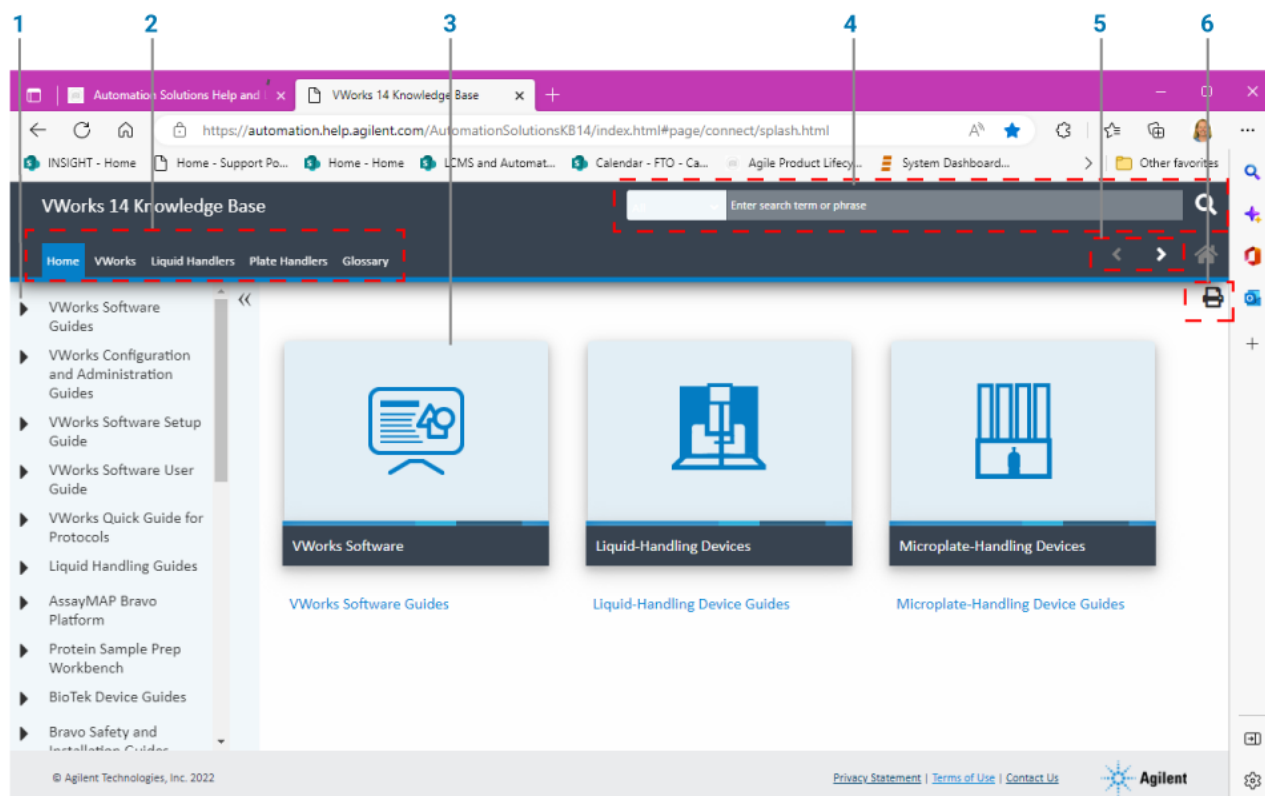
Opening the help topic for an area in the VWorks window



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	Description
1	Contents pane. Lists all the books and the table of contents of the books.
2	Tabs. Allows you to search the Knowledge Base by product type.
3	Topic area. Displays content of selected tab or topic. In the above example, the content of the Home tab is displayed in the topic area.
4	Search bar. Enables you to search the entire knowledge base for a word or term.
5	Navigation buttons. Enable you to navigate through the next or previous topics listed in the Contents pane.
6	Print button. Enables you to print the information in the topic area.



1 Introduction

This chapter contains the following topics:

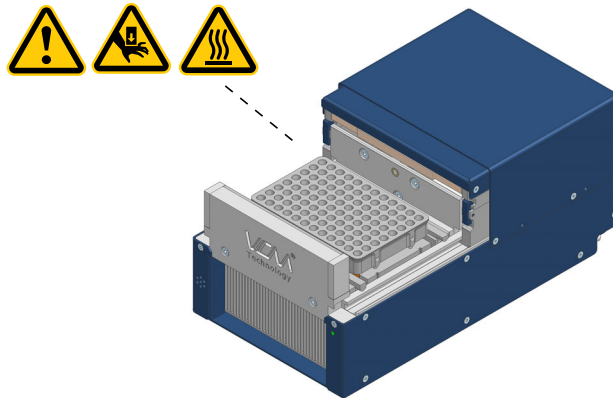
- “About the safety guidelines” on page 2
- “Bravo ODTc accessory overview” on page 3
- “Primary hardware components” on page 5
- “Software components” on page 9
- “Labware requirements” on page 10
- “About ODTc environmental and technical specs” on page 11
- “Installation overview” on page 12

About the safety guidelines

Bravo ODTC

WARNING

Failure to understand the Inheco ODTC safety instructions can expose you to hazardous voltage, crushing, and burning hazards, resulting in injury and product damage. Before using the Bravo ODTC, make sure you are aware of the potential hazards and understand how to avoid being exposed to them.



Ensure you have read the Safety Instructions section of the [Inheco ODTC User and Installation Manual](#) and are trained in the safe operation of the device to limit your safety risk during operation of the ODTC.

Bravo Platform

WARNING

Using controls, making adjustments, or performing procedures other than those specified in the user documentation can expose you to moving-parts hazards and hazardous voltage. Before using the Bravo Platform, make sure you are aware of the potential hazards and understand how to avoid being exposed to them.

Ensure you have read the safety guidelines in the [G5562A, G5563A Bravo Platform Safety and Installation Guide](#) and are trained in the safe operation of the device.

Bravo ODTc accessory overview

Description

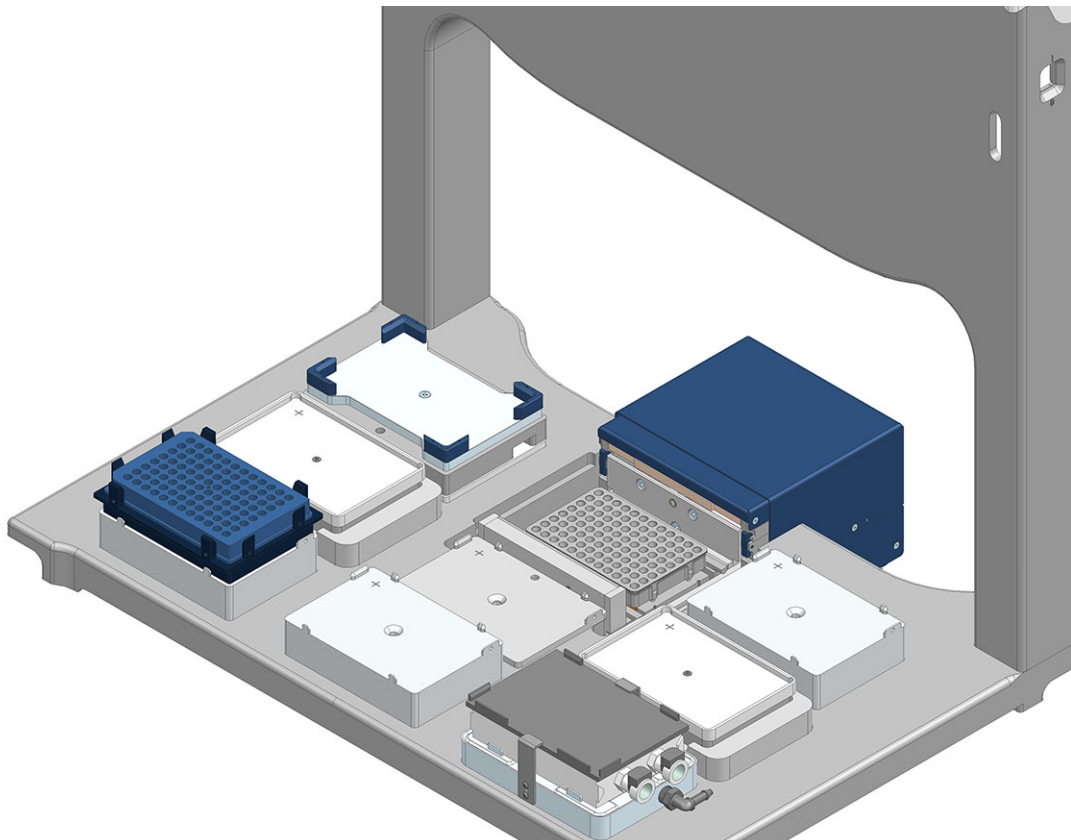
The Bravo On-Deck Thermal Cycler (ODTC) is an accessory that can be used to amplify a genetic target of interest in NGS or PCR sample preparation workflows. The amplification is achieved through heating and cooling biological samples under specified conditions. The Bravo ODTc is controlled by the VWorks software when integrated with a Bravo Platform.

For ODTc general and thermal specifications, see the [Inheco ODTc User and Installation Manual](#).

Prerequisites for Bravo configuration

The following figure shows the ODTc accessory installed at Bravo deck location 2.

Figure Example of Bravo deck with ODTc installed at deck location 2 (top view)



The ODTc accessory requires the following Bravo configuration:

- Special Bravo deck with a cutout at deck location 2 for ODTc installation. The standard Bravo deck does not have the location 2 cutout.

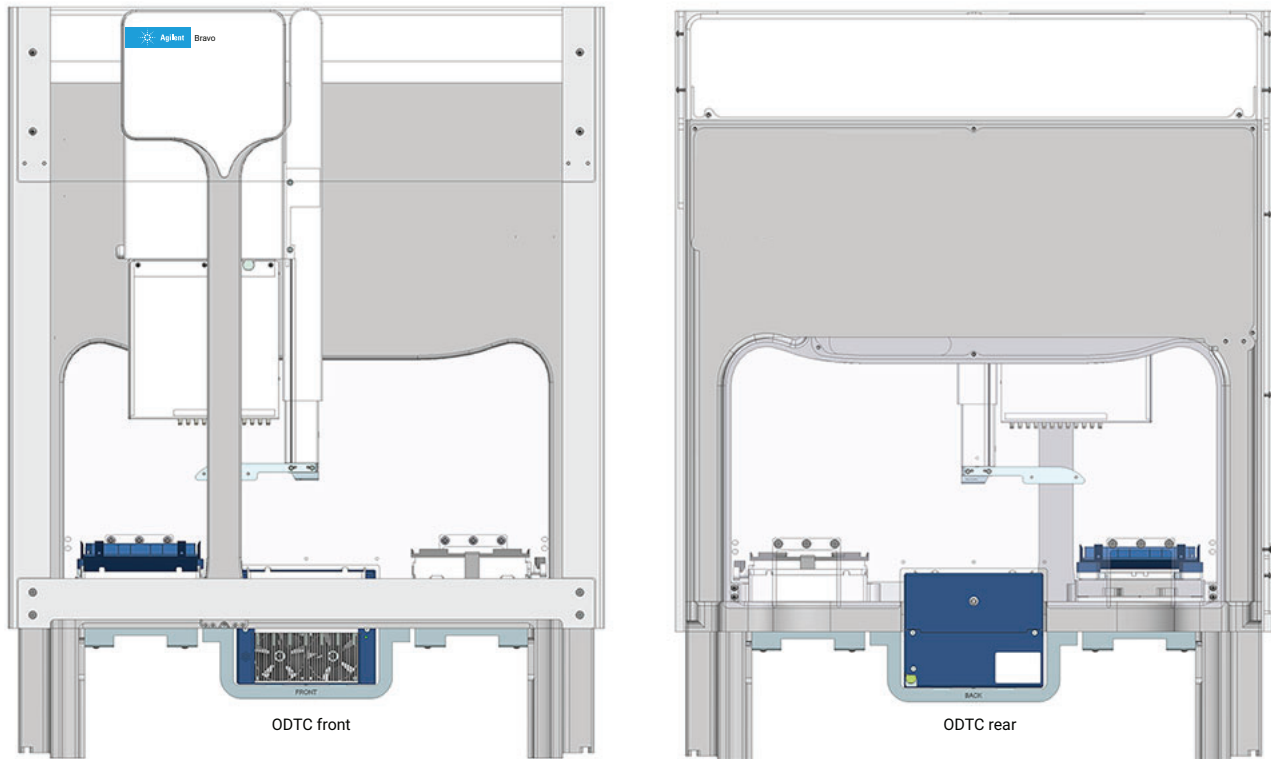
Note: Deck location 5 is moved 5 mm forward to accommodate the size of the accessory at location 2. A short platepad is typically installed at location 5, as the figure shows.

1 Introduction

Bravo ODC accessory overview

- Rear shield that accommodates the portion of the ODC that extends beyond the deck at the rear.
- Slightly greater range of motion in the y-axis (front-to-back) and z-axis (vertical).
- Deck risers to accommodate the below-deck height and air flow requirements of the ODC accessory.

Figure Bravo Platform with ODC installed: front view (left) and rear view (right)



Primary hardware components

Bravo ODTC components

The Bravo ODTC accessory has the following components:

- Special Bravo deck with deck location 2 ODTC cutout and mounting brackets
- ODTC (On-Deck Thermal Cycler)
- Light curtain with rear shield modified for ODTC
- ODTC teach plate

The ODTC consists of the following primary components:

- 1 Thermal Cycler. The accessory that is installed at Bravo deck location 2 by an Agilent field service engineer.
- 2 Power & Control Unit (PCU). The external power supply and communication unit for the ODTC, which is installed next to the Bravo Platform. The PCU includes a power cord and Ethernet cable.

IMPORTANT

The power switch of the ODTC Power & Control Unit must be accessible to turn off power to the ODTC in case of emergency.

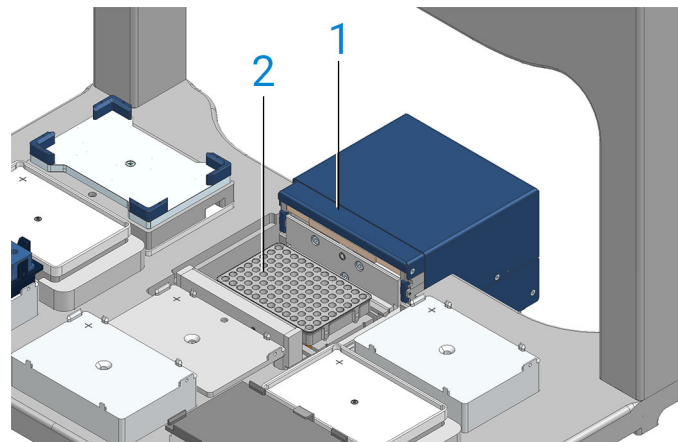
- 3 ODTC cable. The power and communication cable that is hardwired to the ODTC and connects to the ODTC Power & Control Unit.

The following sections provide detailed descriptions.

Thermal Cycler features

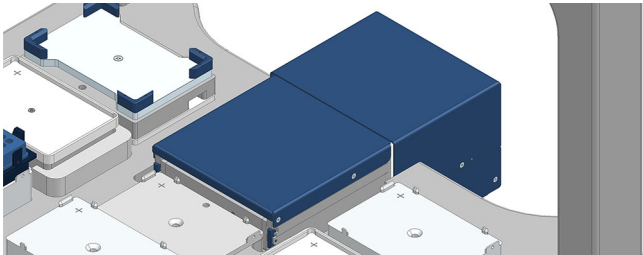
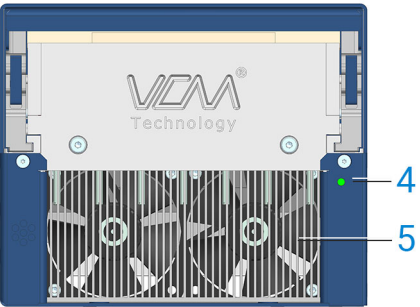
This section provides a summary of the Thermal Cycler features. For detailed descriptions of the ODTC features and technology, see the [Inheco ODTC User and Installation Manual](#).

Figure Thermal Cycler features



1 Introduction

Primary hardware components

Item	Component	Description
1	ODTC door (also known as lid)	<p>The door that slides open and closes horizontally during normal operations.</p> <p>Figure ODTc door closed</p> 
2	Plate mount (also known as Vapor Chamber Mount or VCM)	<p>The plate stage that enables optimized heat transfer into a PCR plate.</p>
3	<i>Optional</i> ODTC Sealing Cover (not shown)	<p>The removable interior cover that can be mounted on the inner surface of the ODTc door. The Sealing Cover is included in the Bravo shipment but not installed by the Agilent field engineer.</p> <p>IMPORTANT Agilent recommends using disposable automation lids or presealed plates instead of the ODTc Sealing Cover to avoid potential cross-contamination and to eliminate the need to clean the cover after every run.</p> <p>For details on the Sealing Cover and instructions on how to install it, see the Inheco ODTc User and Installation Manual.</p>
4	Status LED	<p>The ODTc front panel status light, which is visible below the Bravo deck. The LED displays the following status:</p> <ul style="list-style-type: none">• Green steady light – device is ready for operation• Green flashing light – initialization, self-test, or not ready yet• Red steady light – malfunction• Red flashing light – malfunction of mini PC on the main board of the Power & Control Unit. 

Item	Component	Description
5	Ventilation inlet	The ODTC front panel air inlet that is located below the Bravo deck.
6	Exhaust outlet (not shown)	The outlet that exhausts the warm air from the bottom of the ODTC underneath the Bravo deck.

CAUTION

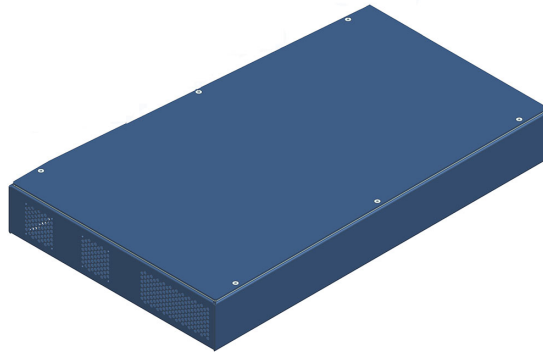
The free air supply for the Thermal Cycler inlet must be ensured to prevent malfunction caused by insufficient cooling. Do not cover the ventilation inlet or exhaust outlet at any time and keep the air inlet clean.

CAUTION

Ensure that the area below the Bravo deck is clear of any obstacles that could restrict the airflow. Do not store any objects below the Bravo deck.

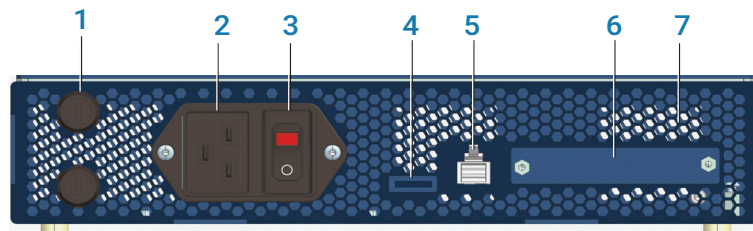
ODTC Power & Control Unit

The Power & Control Unit is the external power supply and communication unit for the ODTC.



The following figure shows the features on the rear panel. The main power switch (figure, item 3) must always be accessible to turn off power to the ODTC in case of emergency.

Figure Power & Control Unit (rear view)

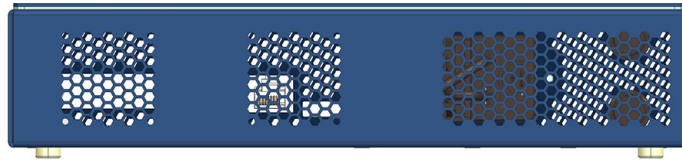


Item	Component	Description
1	Fuses	Houses the AC inlet fuses
2	AC power entry	Connects the power cord from the Power & Control Unit to an AC outlet with a grounded circuit.

1 Introduction

Primary hardware components

Item	Component	Description
3	Power switch	Turns on (I) and off (O) the AC power.
4	Micro-SD card slot	Contains a Micro-SD card. This SD card is used for storing log files. IMPORTANT Do not remove the SD-card. It is necessary for proper operation of the device.
5	Ethernet connector with 2 Status LEDs	Connects the Power & Control Unit to the controlling computer via an Ethernet switch. The LEDs provide the following status: <ul style="list-style-type: none">• Left LED orange – Ethernet connection is okay.• Right LED steady green – Device is ready for operation.
6	ODTC connector	Connects the Power & Control Unit to the power and communication cable from the Thermal Cycler.
7	Ventilation outlet	The outlet located on the back of the unit that exhausts the heated air.
8	Ventilation inlets	The air inlets that are located on the front of the Power & Control Unit, as the following figure shows.



CAUTION

The free air supply for the ODTC Power & Control Unit must be ensured to prevent malfunction caused by insufficient cooling. Do not cover the ventilation inlets or exhaust outlet at any time and keep the ventilation inlets clean.

For a detailed description of the ODTC hardware components, see the [Inheco ODTC User and Installation Manual](#).

Software components

Required software

Agilent VWorks Automation Control software

The VWorks software is a combination of Agilent OpenLab and VWorks components that provide the user management and instrument control for the Bravo Platform. The software is available in the following editions.

VWorks edition	File storage type	Compliance enabled?
VWorks Plus	Content Management <i>Note:</i> A system or VWorks administrator can use the Content Browser to view and edit the project structure and contents at /VWorks Projects/VWorks/	Yes
VWorks Standard	Local file system <i>Note:</i> Any user can access the project files directly using the Windows File Explorer at C:\OLSS Projects\VWorks Projects\VWorks\	No

The VWorks software includes the tools to create labware definitions and liquid classes, set up devices, create device profiles, and create and run protocols.

Bravo Diagnostics is plugin software that you open from within VWorks. You use Bravo Diagnostics to create a device profile that includes the configuration of the ODTC accessory.

SiLA XMLRPC Server

The SiLA XMLRPC Server is the communication interface between the ODTC device and the VWorks software. The SiLA XMLRPC Server must be running in order for VWorks software to control the ODTC device.

The VWorks installation wizard installs the SiLA XMLRPC Server.

Inheco ODTC Script Editor

The ODTC Script Editor is required to create the pre-methods and methods (temperature profiles) to be run on the ODTC. These methods must then be uploaded to the individual ODTC device using the ODTC Device Manager before they are available to the VWorks software.

Note: Any other ODTC process steps, such as open door and close door, are controlled by the VWorks software via the SiLA XMLRPC Server.

For details, see the [Inheco ODTC Script Editor User's Manual](#).

Inheco ODTC Device Manager

The ODTC Device Manager enables the uploading of the methods created using the Script Editor to the ODTC device.

For details, see the [Inheco ODTC Device Manager User's Manual](#).

Software terminology

Software terms		Description
ODTC Script Editor	VWorks	
lid	door	The ODTC door that opens and closes horizontally under VWorks control.
mount	mount	The ODTC Vapor Chamber Mount (VCM) where the VWorks software commands the Bravo Platform to pick and place microplates at the ODTC. The mount provides the interface that enables an optimized heat transfer into the microplate.
temperature initialization step	pre-method	A method to set the ODTC mount and door to a defined start temperature. The ODTC tasks in the VWorks protocol specify which pre-method or method to run on the ODTC. For details, see “ODTC protocol tasks” on page 41 .
method	method	Set of temperature steps (programming of simple temperature profiles). VWorks refers to ODTC methods and PCR profiles as methods.
PCR	method	

Labware requirements

The following table lists labware that is compatible with the Bravo ODTC. The VWorks software includes the corresponding labware entries, which belong to both of the following labware classes:

- Uses Standard Platepad
- Uses Thermal Cycler Platepad

Labware (VWorks labware entry)	Manufacturer and part number
96 Eppendorf Twin.tec PCR plates (full-skirted) (96 Eppendorf Twin.tec PCR)	Eppendorf 951020401
Armadillo PCR Plate, 96-well, clear, clear wells (full-skirted) (96 Armadillo PCR)	ThermoFisher Scientific AB2396
Hamilton PCR Comfort Lid (disposable lid)*	Hamilton 814300

* Agilent recommends using disposable automation lids or presealed plates instead of the ODTC Sealing Cover.

About ODTC environmental and technical specs

Refer to the [Inheco ODTC User and Installation Manual](#) for detailed ODTC environmental and technical specifications.

About ODTC thermal specifications

The ODTC temperature range is 4 °C to 99 °C. The operation of the ODTC below ambient temperature has to be limited to 1-2 hours per application. Depending on the humidity in the atmosphere, condensation will be generated when operating the ODTC below ambient temperature.

CAUTION

Condensation might have an effect on the thermal performance and lifetime of the ODTC. Condensate can prevent the ODTC from operating properly and can damage the ODTC.

After each use of the ODTC below ambient temperature a drying step needs to be performed. It can be part of a following method or should follow directly after the cooling period. The drying step needs to be clearly above ambient temperature. The length of the drying step depends on the amount of condensate and should be ended when no condensation is visible on the Mount or its surrounding.

Environmental conditions

The ODTC tolerates a narrower temperature and humidity range than the Bravo Platform.

Device	Operating temperature (°C)	Operating humidity
Bravo Platform	4 °C to 40 °C	10-90% Relative Humidity, non condensing
ODTC	15 °C to 32 °C	30-80% Relative Humidity, non condensing

Installation overview

Agilent field personnel install the Bravo Platform with ODTC. This guide assumes that the Bravo On-Deck Thermal Cycler (ODTC) accessory and the controlling VWorks software have already been installed.

The following table presents an overview of the installation workflow for reference.

Step	For this task...	See...
1	<p>Verify that the installation site meets the site requirements.</p> <p>IMPORTANT Ensure that the laboratory table is not bowed and is perfectly flat and rigid. A bowed or wobbly table will cause placement errors during protocol execution.</p> <p>Clear the table of all material that might interfere with the installation.</p>	Bravo Platform Site Preparation Checklist
2	<p>Unpack the computer and ensure that it meets the computer specifications.</p>	Bravo Platform Installation Checklist
3	<p>Unpack the Bravo Platform and accessories.</p> <p>IMPORTANT Do not remove the y-axis shipping stop from the head mount until after Bravo deck risers are installed.</p>	Bravo Platform Unpacking Guide
4	<p>Install the Bravo deck risers and then finish installing Bravo Platform.</p> <p>IMPORTANT Ensure a short platepad is installed at deck location 5, which is directly in front deck location 2, where the Bravo ODTC will be installed.</p>	G5562A, G5563A Bravo Platform Safety and Installation Guide
5	<p>Install the ODTC accessory at deck location 2.</p>	Agilent field service
6	<p>Set up the computer and install the software:</p> <ul style="list-style-type: none">• VWorks software 14.2 (or later) and SiLA XMLRPC Server• Inheco ODTC Script Editor 3.0.1• Inheco ODTC Device Manager 1.1.0	Agilent field service
7	<p>Upload any provided pre-methods and methods to the Bravo ODTC.</p> <p>The ODTC temperature profiles (pre-methods and methods) must be uploaded to the ODTC accessory using the ODTC Device Manager utility before the methods are available for use in the VWorks software.</p> <p><i>Note:</i> The ODTC methods are created using Inheco ODTC Script Editor. For details, see the Inheco ODTC Script Editor User's Manual.</p>	Inheco ODTC Device Manager User's Manual
8	<p>Set up the Bravo Platform, including the teachpoints and the gripper y-axis offset.</p>	Bravo Platform User Guide

Step	For this task...	See...
9	Configure the ODTC and set the ODTC teachpoint.	"Setting up Bravo ODTC" on page 15
10	Install the Bravo shields and Light Curtain.	<i>G5562A, G5563A Bravo Platform Safety and Installation Guide</i>
11	Verify the installation and setup.	Agilent field service

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2 Setting up Bravo ODTc

This chapter contains the following topics:

- “Setup workflow” on page 16
- “Starting up and shutting down” on page 17
- “Starting and stopping SiLA XMLRPC Server” on page 20
- “Configuring Bravo ODTc accessory” on page 21
- “Initializing the profile” on page 28
- “Setting the teachpoint” on page 29
- “Testing Bravo ODTc” on page 34
- “Setting the labware class” on page 37

Setup workflow

The following table presents the workflow for setting up the Bravo ODTC accessory.

Step	For this task...	See...
1	Start up the Bravo Platform with ODTC.	"Starting up and shutting down" on page 17
2	Start the SiLA XMLRPC Server to enable VWorks communication with the Bravo ODTC.	"Starting and stopping SiLA XMLRPC Server" on page 20
3	Create the VWorks device file and Bravo profile.	<i>Bravo Platform User Guide</i>
4	Configure the ODTC accessory in the Bravo profile you created in step 3.	"Configuring Bravo ODTC accessory" on page 21
5	Initialize the profile in Bravo Diagnostics.	"Initializing the profile" on page 28
6	Set the teachpoint for the ODTC at Bravo deck location 2.	"Setting the teachpoint" on page 29
7	Use diagnostics to test the ODTC communication.	"Testing Bravo ODTC" on page 34
8	Set the labware class for the labware allowed on the ODTC at Bravo deck location 2.	"Setting the labware class" on page 37
9	Create a VWorks protocol that is linked to the device file you created in step 3.	<i>VWorks Automation Control User Guide</i>
10	Set the ODTC task parameters in the VWorks protocol.	<ul style="list-style-type: none">"ODTC Action (Agilent Bravo)" on page 42"ODTC Run Method (Agilent Bravo)" on page 46

Starting up and shutting down

Starting up the Bravo Platform with ODC

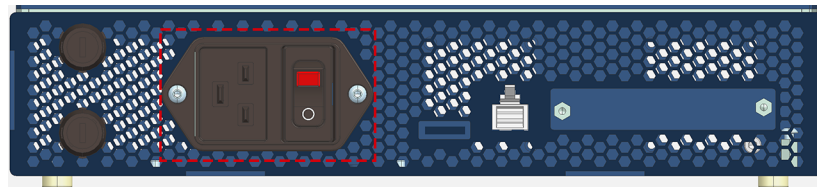
CAUTION

Always turn off the Bravo Platform before installing or uninstalling a liquid-handling head. Failure to do so can damage the head electronics.

To start up the Bravo Platform with ODC:

- 1 Ensure that the main power and Ethernet cables are plugged into the Bravo connection panel.
- 2 At the ODC Power & Control Unit, ensure that the power and communication cables are properly connected, and turn on the power switch.

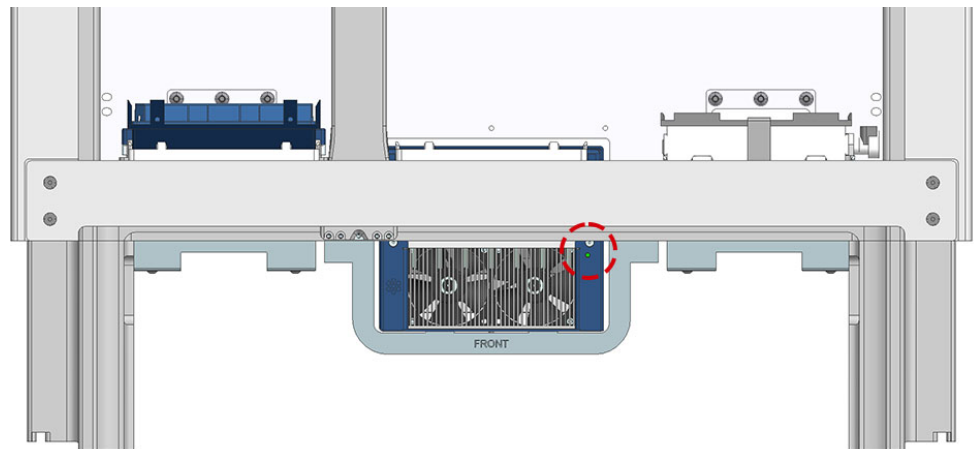
Figure Power & Control unit (rear view)



The ODC status LED light flashes green for up to a minute while the ODC firmware is booting. The green light stops flashing and then remains lit. This light is located below the deck.

Note: The ODC can respond to communication attempts, including initialization, only after the green light stops flashing.

Figure ODC status LED location below Bravo deck (front view)

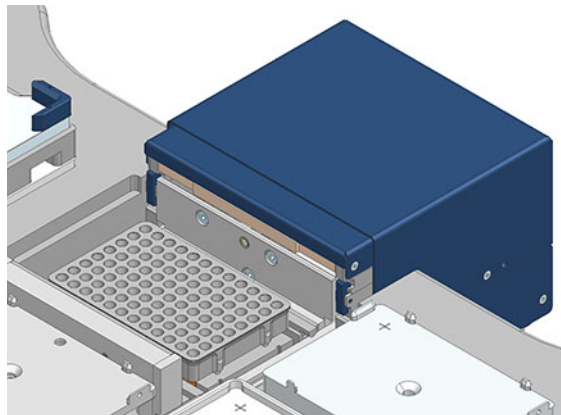


At the ODC, the door slides open.

2 Setting up Bravo ODTc

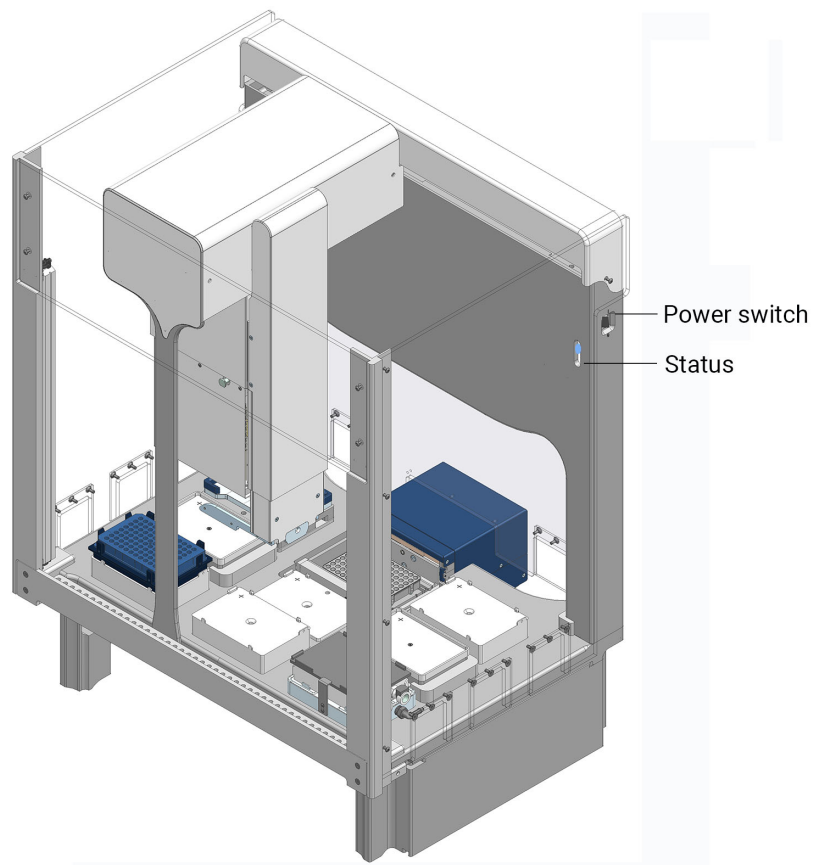
Starting up and shutting down

Figure ODTc door open (top view)




- 3 Turn on any other Bravo accessories.
- 4 Turn on the computer and the monitor, and start the Microsoft Windows operating system.
- 5 If you have not already done so, install the liquid-handling head.
- 6 On the side of the Bravo Platform, press the power switch to the **on (I)** position.
The front panel status lights turn blue.

Note: If the emergency-stop pendant is pressed or absent, the status lights will turn red.



- 7 Start the VWorks software:

On the Windows desktop, double-click the VWorks shortcut  and log in.



Note: If the VWorks menu bar or toolbars are hidden, right-click the VWorks window, and select the view options from the shortcut menu.

- 8 Start the SiLA XMLRPC Server. See [“Starting and stopping SiLA XMLRPC Server” on page 20.](#)

Shutting down the Bravo Platform with ODC

Shut down the Bravo Platform before you:

- Clean the Bravo Platform
- Change the liquid-handling head
- Install accessories
- Move the Bravo Platform

CAUTION

Always turn off the Bravo Platform before installing or uninstalling a liquid-handling head. Failure to do so can damage the head electronics.

To shut down the Bravo Platform:

- 1 If removing the liquid-handling head, ensure that the disposable tips are removed.
- 2 Optionally, home the liquid-handling head.
- 3 Close the software and shut down the computer.
- 4 Turn off the ODC and any other accessories.
- 5 If using an Auto Filling Reservoir, disconnect the bottles to prevent siphoning.
- 6 On the side of the Bravo Platform, press the power switch to the **off (o)** position.
- 7 If applicable, uninstall the liquid-handling head.

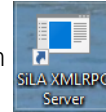
Starting and stopping SiLA XMLRPC Server

The ODTc has a SiLA (Standardization in Laboratory Automation) communication interface. The SiLA XMLRPC Server must be running to enable VWorks communication with the Bravo ODTc device.

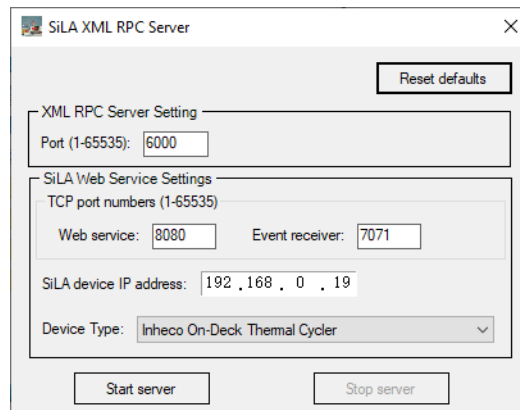
Starting the SiLA XMLRPC Server

To start the server:

- 1 On the Windows desktop, double-click the SiLA shortcut icon



The SiLA XMLRPC Server opens.



- 2 Verify the settings. In most cases, you can use the default settings.

Setting	Value
XML RPC Server Setting	6000 (default)
Port (1–65535)	The corresponding value in the Bravo profile ODTc configuration must match this value.
TCP port numbers	The SiLA Web Service port numbers.
Web service	8080 (default)
Event receiver	7071 (default)
SiLA device IP address	192.168.0.19 (default)
	The static IP address for the ODTc.

- 3 Click **Start server**.
The Stop server button becomes available and the Start server button is grayed.

Stopping the SiLA XMLRPC Server

To stop the server:

In the SiLA XMLRPC Server window, click **Stop server**.

Configuring Bravo ODTc accessory

Before you start

VWorks administrator or technician privileges (advanced users) are required to create and manage profiles for the Bravo Platform.

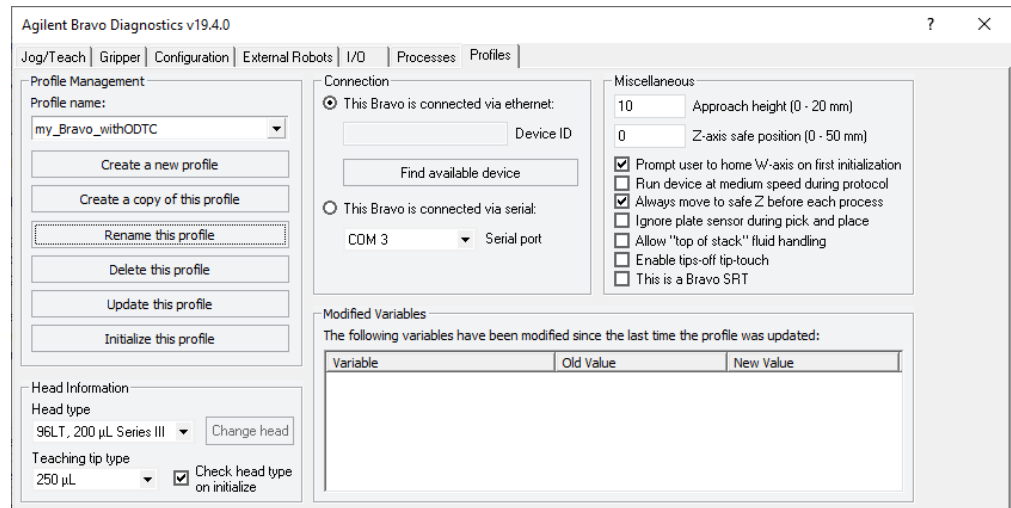
VWorks Plus. The software logs audit trails for device profiles, which are records of interest.

The Bravo profile is referenced by a VWorks device file. The VWorks device file must be open before you can create or modify a profile. The following procedure assumes that you are familiar with creating and modifying Bravo profiles. For detailed instructions on how to create a device file containing a Bravo device and how to create a Bravo profile, see the [Bravo Platform User Guide](#).

Configuring ODTc in Bravo profile

To configure the ODTc in a Bravo profile:

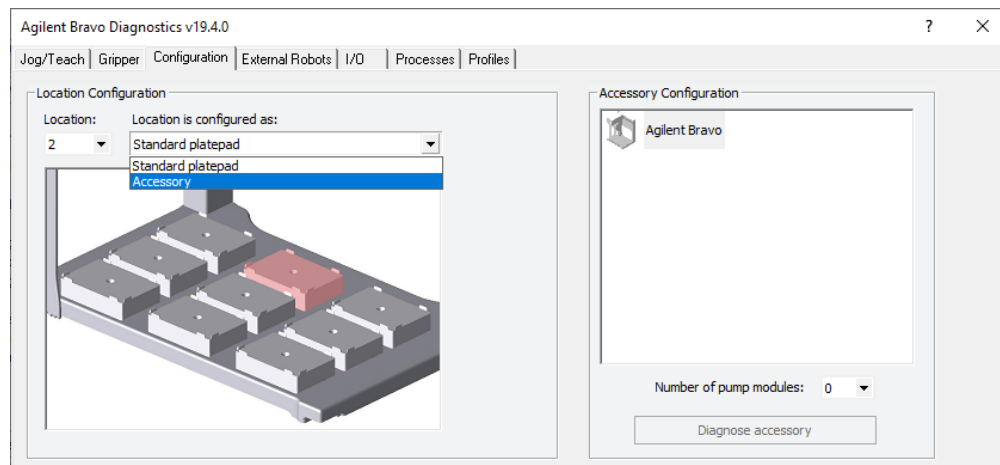
- 1 In Bravo Diagnostics, click the **Profiles** tab and select the Bravo profile that you want to use to control the ODTc.



- 2 Click the **Configuration** tab, and select **Location 2**.
- 3 In the **Location is configured as** list, select **Accessory**.

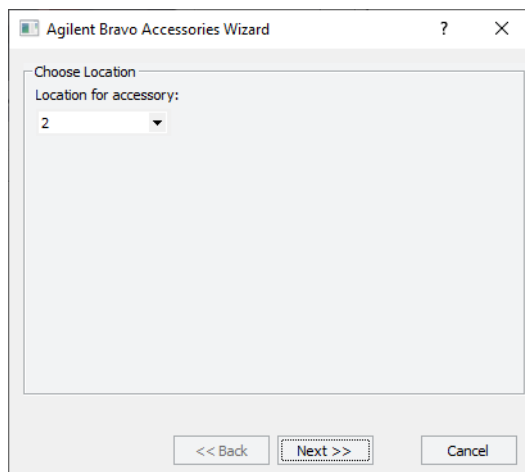
2 Setting up Bravo ODTC

Configuring Bravo ODTC accessory

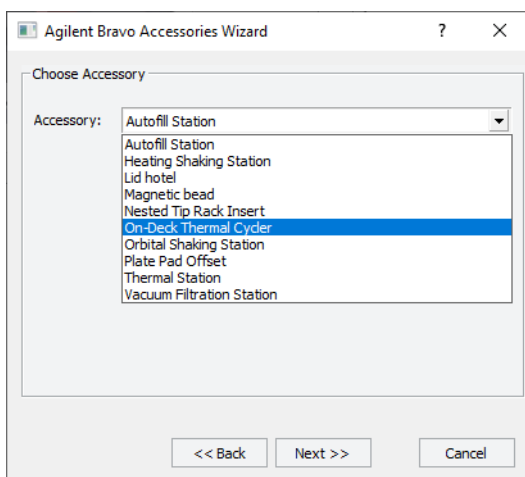


The Bravo Accessories Wizard opens.

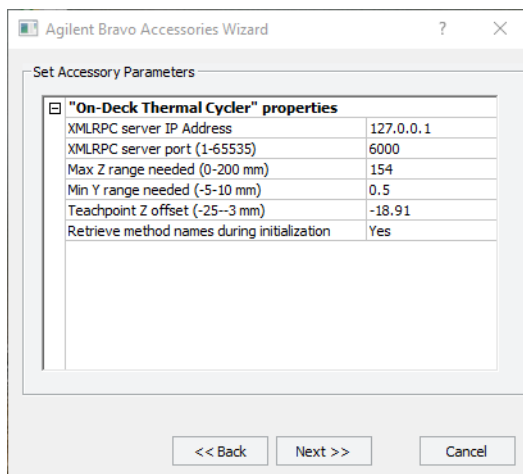
- 4 In the **Location for accessory** list, verify that location 2 is selected, and then click **Next**.



- 5 In the **Accessory** list, select **On-Deck Thermal Cycler**, and then click **Next**.



6 In the **Set Accessory Parameters** page, set the following parameters.



Parameter	Description
XMLRPC server IP Address	The IP Address used by the SiLA XMLRPC Server, which is typically installed on the same computer as the VWorks software. Default: 127.0.0.1 <i>Note:</i> The default is a pseudo name for Localhost. This IP address allows the computer to connect to and communicate with itself. <i>Note:</i> This is not the IP address for the ODC accessory, which has its own static IP address.
XMLRPC server port (1–65535)	The TCP port for the SiLA XMLRPC Server. This value must match the corresponding value in the SiLA XMLRPC Server. Range: 1–65535 Default: 6000
Max Z range needed (0–200 mm)	The value (mm) for the Bravo head’s lowest point of travel along the z-axis. The ODC plate stage sits lower in the Bravo deck than a standard platepad. To enable 250 µL pipette tips to reach the bottom of the wells in a microplate, the head must go down lower than the normal setting of 150. The default value, 154, for the ODC is sufficient in most cases. Range: 0–200 Practical range: 150–160 (standard Bravo Platform) Default: 154

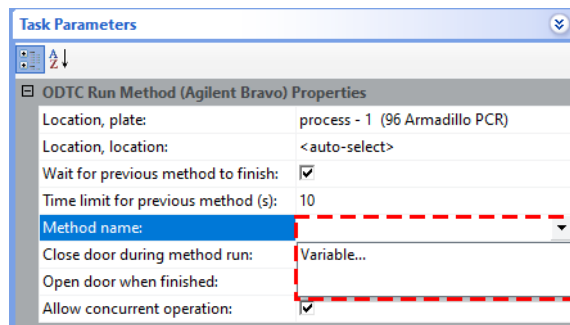
2 Setting up Bravo ODTc

Configuring Bravo ODTc accessory

Parameter	Description
Min Y range needed (-5–10 mm)	<p>The value (mm) for the Bravo head's lowest point of travel along the y-axis.</p> <p>The ODTc plate stage extends further back on the Bravo deck than a standard platepad. To correctly teach this deck position, the pipette tip must be centered over the teaching jig crosshairs. In some cases, the Min Y range may need to be smaller than the default 0.5 mm.</p> <p>Range: -5 to 10</p> <p>Practical range: -5–0.5 (standard Bravo Platform)</p> <p>Default: 0.5</p>
Teachpoint Z offset (-25 - -3)	<p>The distance between the values of the following z-axis coordinates:</p> <ul style="list-style-type: none">• ODTc teachpoint that is set using the teach plate• Bottom of a PCR plate resting on the ODTc mount <p>In general, you should start with the default value.</p> <p>If you find that the PCR plates are not firmly seated on the ODTc mount when placed there by the Bravo gripper, you can adjust this value. The more negative the value, the lower the plate will be positioned on the ODTc mount.</p> <p>Range: -25 to -3</p> <p>Default: -18.91 mm</p>

Parameter	Description
Retrieve method names during initialization	<p>The option to populate the Method name drop-down list of the VWorks ODT tasks with the method names retrieved from the ODT accessory.</p> <p>Options:</p> <ul style="list-style-type: none"> • Yes. VWorks will re-read the method names each time the profile is initialized, which causes initialization to take a little longer. The retrieved names will be available for selection in the VWorks ODT tasks. • No. Initialization will be faster, but the method names will not appear in the VWorks ODT task parameters. The following figure shows an example of a task without the method names listed.

However, if your method names are already specified in the VWorks protocol, and you do not intend to change them or write any new protocols, you can save a few seconds during initialization by selecting No.



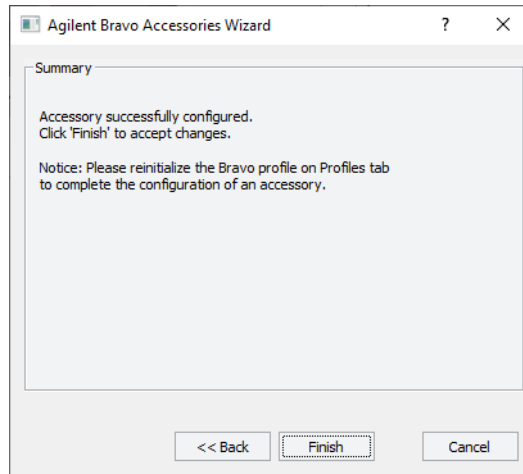
Alternatively, you can use a variable or enter the exact method name for the Method name parameter in the task.

Another option is to use the **Re-read method names from accessory** control in the ODT Diagnostics dialog box to retrieve the list of method names for the current VWorks session. But when you reinitialize the profile, any method names retrieved using this option are erased. For details, see [“Testing Bravo ODT” on page 34](#).

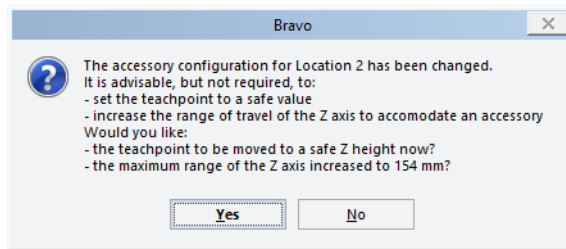
Default: Yes

Click **Next**.

7 In the **Summary** page, click **Finish**.

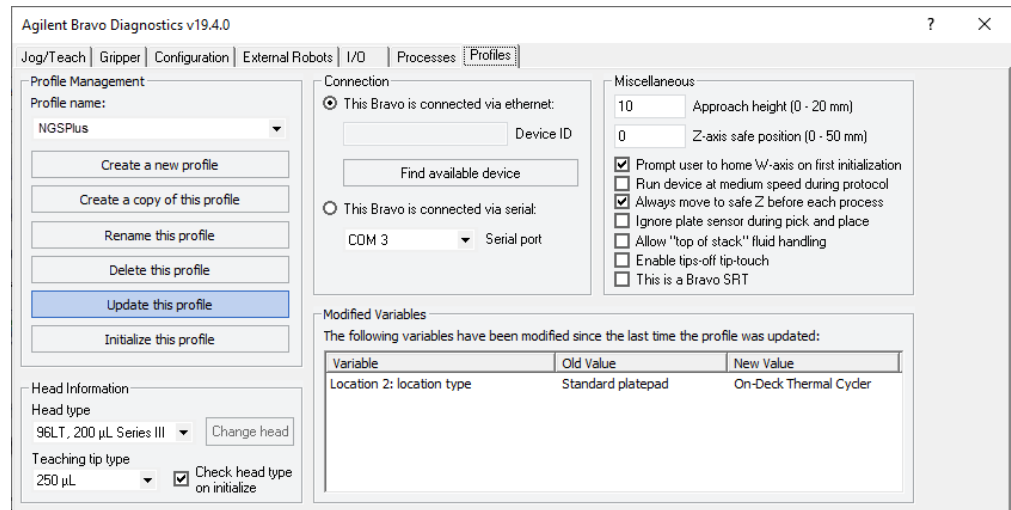


8 In the message that appears, click one of the following:



Option	Description
Yes	<p>Moves the teachpoint for this deck location to a safe height (z-axis coordinate).</p> <p>Increases the lowest point of travel on the z-axis to 154 mm, which is lower than the head can travel at other deck locations.</p> <p>Typically, you would select Yes.</p> <p><i>Note:</i> After changing the maximum z-axis range, it cannot be reset in this profile at this location using the Configuration tab. An Agilent field service engineer can use the Direct Profile Edit Utility to reset the value.</p>
No	<p>Does not move the teachpoint to a safe height, and does not change the value of the Max Z range needed parameter.</p> <p><i>Note:</i> In a new profile, the Max Z range needed parameter defaults to 150.</p>

9 In the Profiles tab, click **Update this profile**.



10 *VWorks Plus only*. If an audit trail is being logged, the Audit Comment dialog box opens. Select or type the audit comment, and then click **OK**.

Initializing the profile

Initializing the profile establishes communication with the Bravo Platform and accessories. This topic describes how to initialize the profile in Bravo Diagnostics.

Before you start

WARNING

When you initialize the Bravo Platform, the head and tie bar can move. To prevent potential injury, keep clear of the device while it is in motion.

Ensure the following:

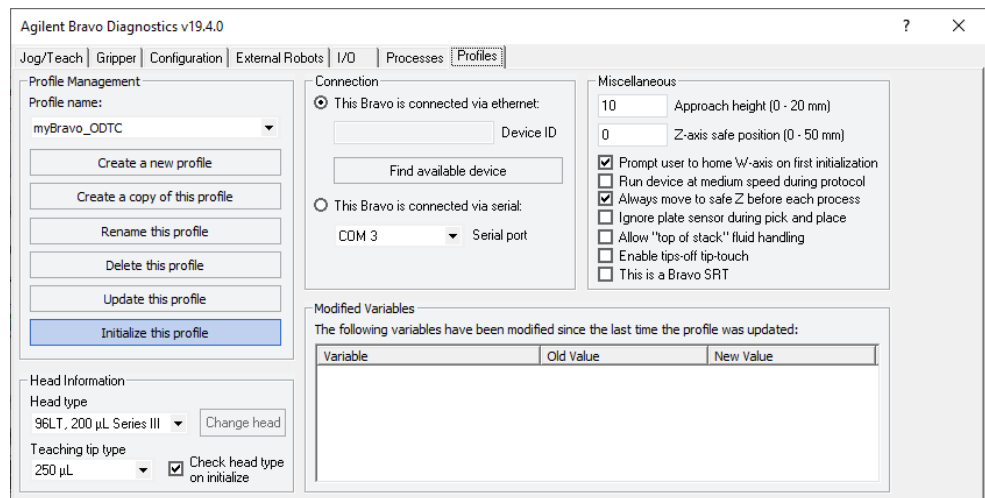
- The Bravo front panel status lights are blue.
- The light on the front of the ODTC is lit green, not flashing green. This light is located below the deck.

When the ODTC is powered on, its indicator light flashes green for up to a minute while the ODTC firmware is booting. The ODTC cannot respond to any communication attempts, including initialization, until a few seconds after this green light stops flashing.

Initializing the profile in Bravo Diagnostics

To initialize the profile in Bravo Diagnostics:

- 1 In the **Profiles** tab, select the profile from the **Profile name** list.
- 2 Click **Initialize this profile** to start initializing the selected profile.



Setting the teachpoint

About this topic

This topic describes how to set the teachpoint for the ODC deck location on the Bravo Platform. For instructions on how to set the teachpoints at the other eight deck locations, see the [Bravo Platform User Guide](#).

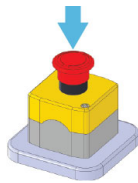
Before you start

WARNING

To avoid potential injury and damage to the device, only personnel trained in how to teach the Bravo Platform should perform the procedures in this topic.

WARNING

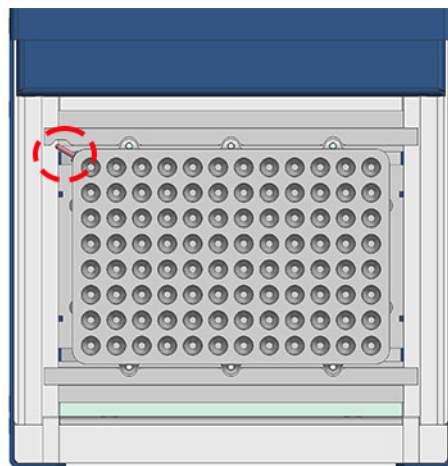
The red Stop motors button in Bravo Diagnostics does not perform an immediate stop. The Bravo head can continue to move in the same direction at the same speed after you click the button. To perform an emergency stop, press the red button on the emergency-stop pendant.



CAUTION

Be careful not to damage or break off the small tube in the ODC plate mount (VCM), as this will lead to complete loss of the VCM performance.

Figure Location of small tube in the ODC plate mount (top view)


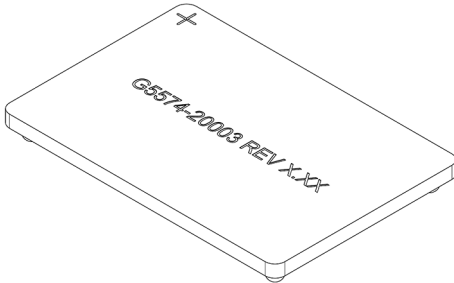


2 Setting up Bravo ODTC

Setting the teachpoint

Make sure you do the following:

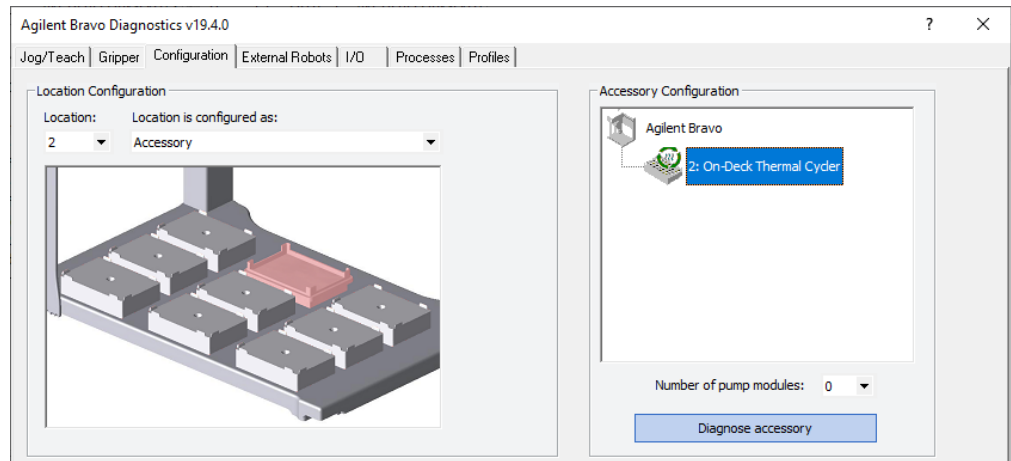
- Remove all labware from the Bravo deck locations.
- Verify that the correct liquid-handling head is installed and the corresponding profile is initialized.
- Ensure you have the required resources listed in the following table.

Required resource	Description
Pipette tip for teaching	Ensure the tip is the correct teaching tip for the liquid-handling head, for example, use a 250- μ L pipette tip for the 96LT head. Ensure that the pipette tip is new and in good condition.
feeler gauge, 0.010-inch (0.254 mm)	This gauge is used to set the vertical distance between the pipette tip and top of the crosshairs mark on the platepad or accessory. 
ODTC teach plate	The teach plate is a teaching jig with a crosshairs mark in one corner. 

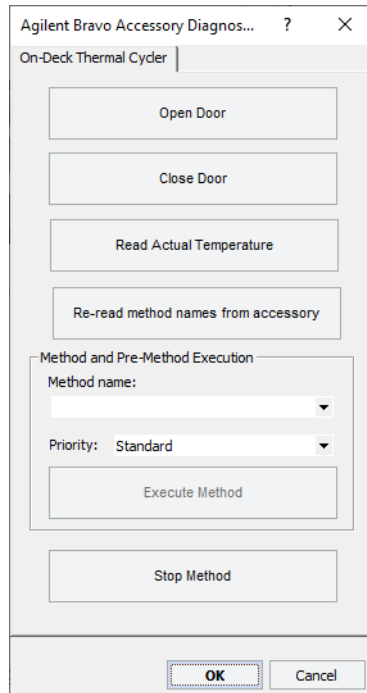
To set the teachpoint for the Bravo ODTC:

- 1 Ensure that the ODTC door is open, as the following figure shows.
 - If the door is open, go to step 3.
 - If the door is closed, continue to step 2.

- 2 To open the door using Diagnostics, click the **Configuration** tab, select the **On-Deck Thermal Cycler** icon, and then click **Diagnose accessory**.



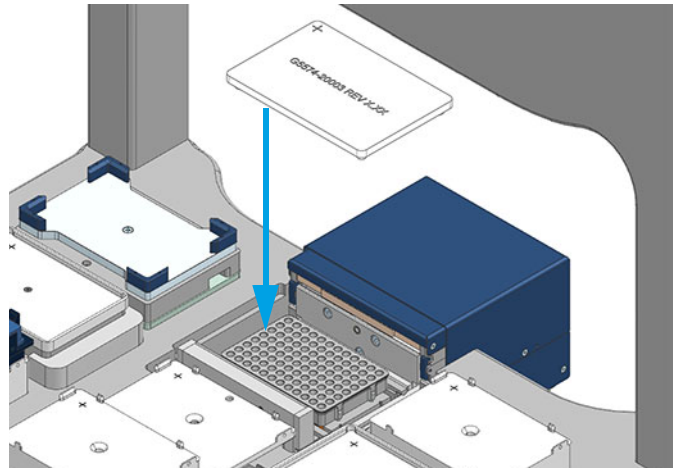
- a In the On-Deck Thermal Cycler Diagnostics dialog box, click **Open Door**.



2 Setting up Bravo ODC

Setting the teachpoint

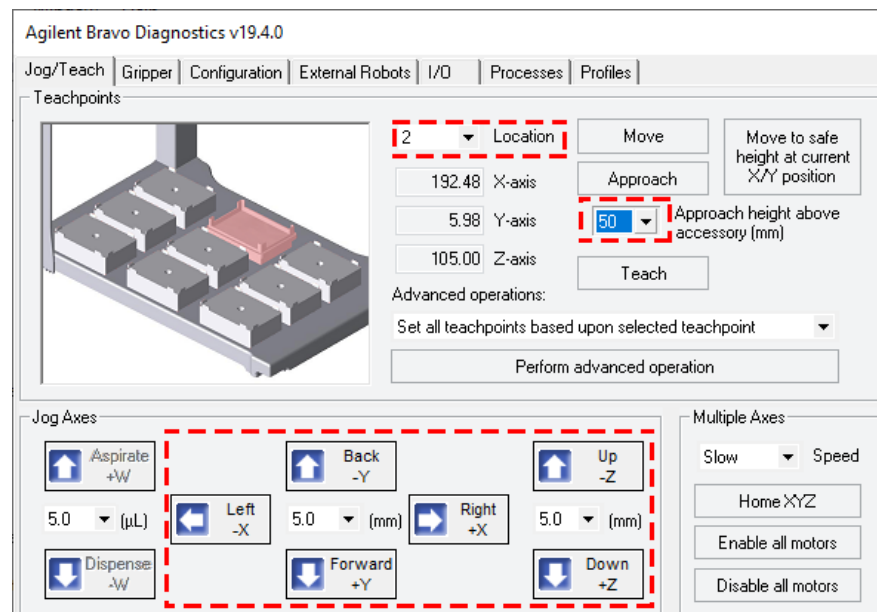
- 3 Place the teach plate on the ODC plate mount. Ensure that the crosshairs mark is oriented toward the left-rear corner of the Bravo deck.



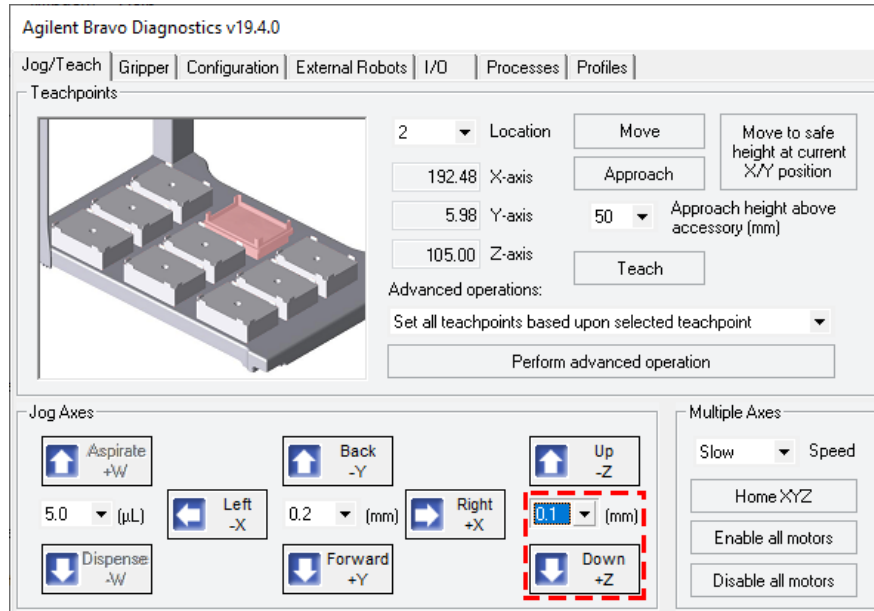
The teach plate has 4 nubs on the bottom that fit into the 4 corner holes in the ODC mount, which positions the teach plate precisely.

- 4 In Bravo Diagnostics, click the **Jog/Teach** tab, and select **Location 2**.
- 5 In the **Approach height above teachpoint** box, select **50**, and then click **Approach**.

The Bravo head moves to deck location 2 and moves down so that the pipette tip is approximately 50 mm above the crosshairs on the teaching plate.



- 6 Carefully, use the **Jog Axes Down +Z** control to move the pipette tips down until the pipette tip is 1–2 mm from the crosshairs, and then use the **Jog Axes X/Y** controls to center the A1 tip above the crosshairs.
- 7 When the A1 tip is perfectly centered above the crosshairs, set the **Down +Z** increment to 0.1 mm. Carefully, jog the head down in 0.1-mm increments just until a 0.254-mm (0.010-inch) feeler gauge cannot fit under the pipette tip.



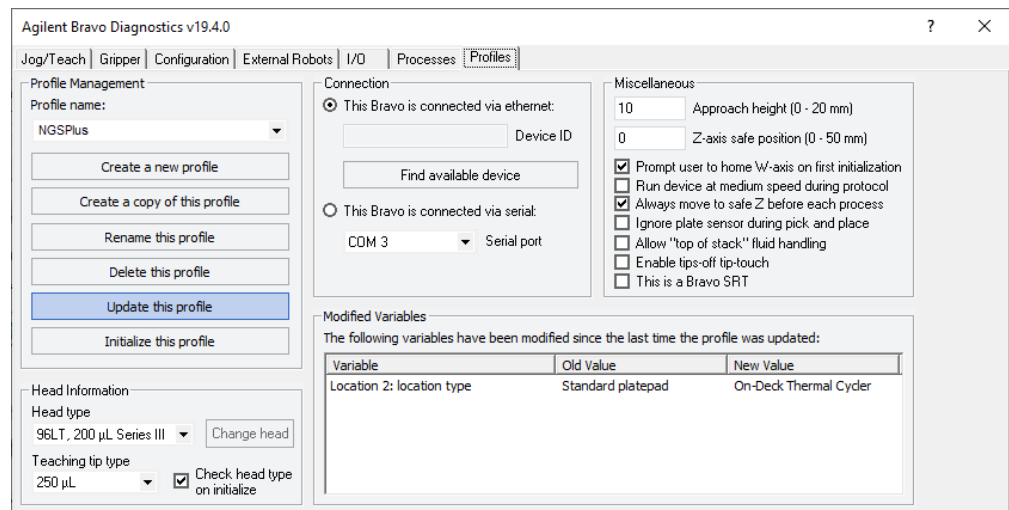
Raise the head by 0.05-mm increments until you reach the lowest possible height that allows the feeler gauge to slide under the pipette tip without deflecting it.

- 8 Click **Teach** to set the new teachpoint.

The ODT plugin automatically calculates the conversion between the teachpoint Z coordinate and the Z coordinate of the bottom of the teach plate.

- 9 Click **Move to safe height at current X/Y position**, and then remove the teach plate from the ODT.

- 10 To save the new teachpoint for this location, click the **Profiles** tab, and then click **Update this profile**.



- 11 *VWorks Plus only*. If an audit trail is being logged, select or type a comment in Audit Comment dialog box, and then click **OK**.

Testing Bravo ODTC

Before you start

IMPORTANT

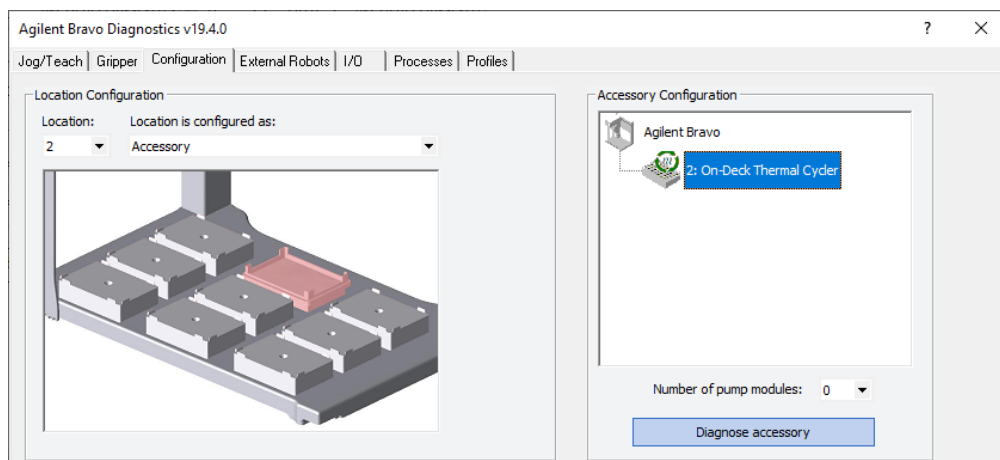
Make sure that you initialize the profile you are testing immediately before testing the communication with the accessory.

Ensure that the SiLA XMLRPC Server is on to enable communication with the Bravo ODTC.

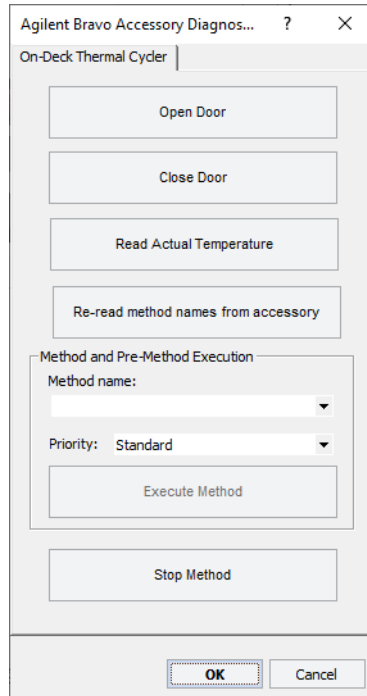
Procedure

To test the communication with the ODTC:

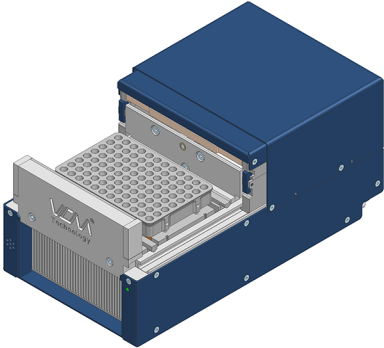
- 1 In Bravo Diagnostics, click the **Configuration** tab.
- 2 In the **Accessory Configuration** pane, click the **On-Deck Thermal Cycler** icon, and then click **Diagnose accessory**.



The Agilent Bravo Accessory Diagnostics dialog opens and display the On-Deck Thermal Cycler controls.



3 Use the following controls and indicators as appropriate.

Controls and indicators	Description
Open Door	Horizontally slides the ODC door (lid) open.
	
Close Door	Horizontally slides the ODC door closed.
Read Actual Temperature	Opens a Sensor Values dialog box that displays the temperature reading.
Re-read method names from accessory	Retrieves the names of the pre-methods and methods that have been uploaded to the Bravo ODC.
Method name	Specifies the method name that you want to run.

2 Setting up Bravo ODTC

Testing Bravo ODTC

Controls and indicators	Description
Priority	Specifies the priority for the selected method: <ul style="list-style-type: none">• Standard. Select this option for a method or a pre-method.• Finish after 40 seconds. If a pre-method is specified, you can select this option.
Execute Method	Runs the selected method on the ODTC.
Stop Method	Stops the running method and any post-method temperature control in progress on the ODTC. <i>Note:</i> If the method finishes executing but the ODTC fan is still running, a post-method temperature control is in progress.

Setting the labware class

ODTC labware class

The VWorks software includes the following labware class to specify the allowable labware on the ODTC at Bravo deck location 2:

Uses Thermal Cycler Platepad


This labware class includes the labware entries for the compatible labware listed in [“Labware requirements” on page 10](#). The Uses Thermal Cycler Platepad labware class should be the only one allowed to use the ODTC at deck location 2. All other labware classes are prohibited at this location.

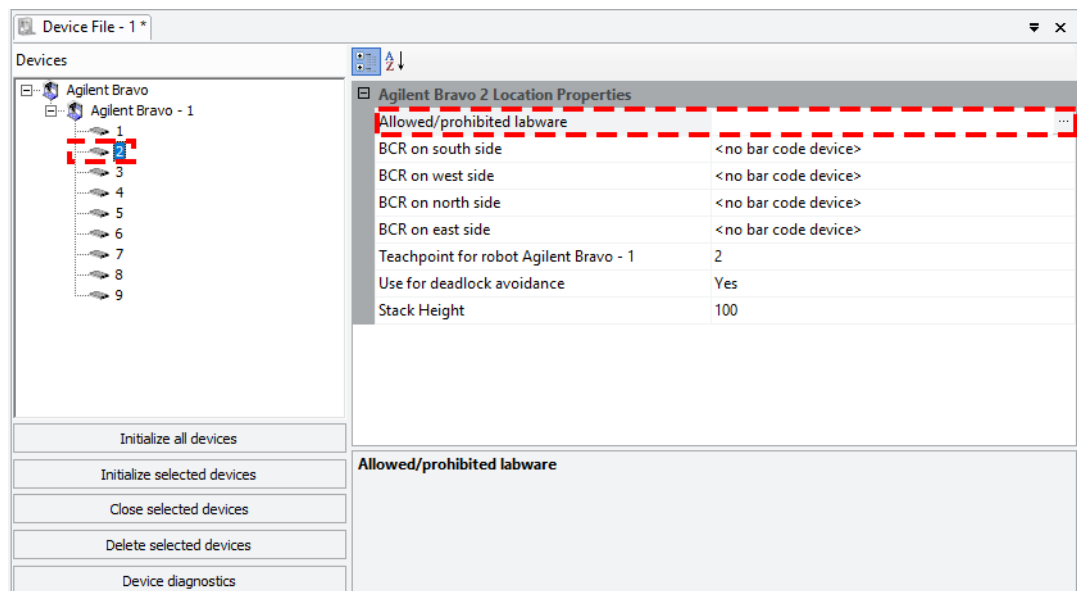
Use the following procedure to set the labware class for the ODTC accessory at Bravo deck location 2 in the VWorks device file.

Setting the allowable labware class for deck location 2

The following procedure assumes that you have already created a VWorks device file that contains a Bravo device. If you have not yet created a device file, see the [Bravo Platform User Guide](#) for instructions.

To set the labware class for deck location 2:

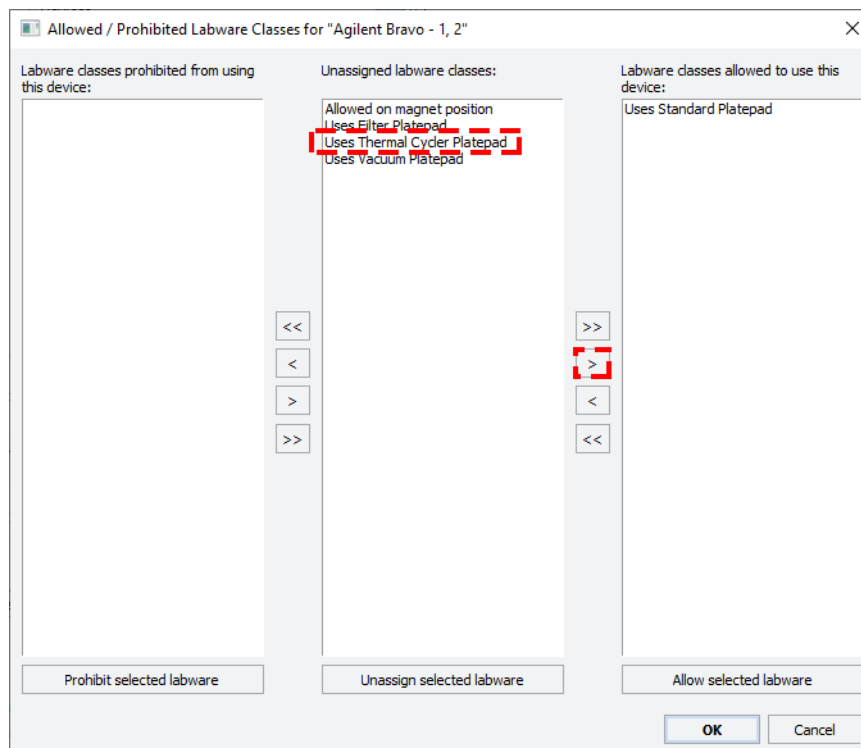
- 1 In the VWorks window, open the device file that includes the Bravo device.
- 2 Ensure the correct profile with the configured ODTC accessory is selected for the Bravo device.
- 3 In the **Devices** pane, expand the device icon, and select location 2 to display the location properties.
- 4 In the **Allowed/prohibited labware** field, click the browse button .



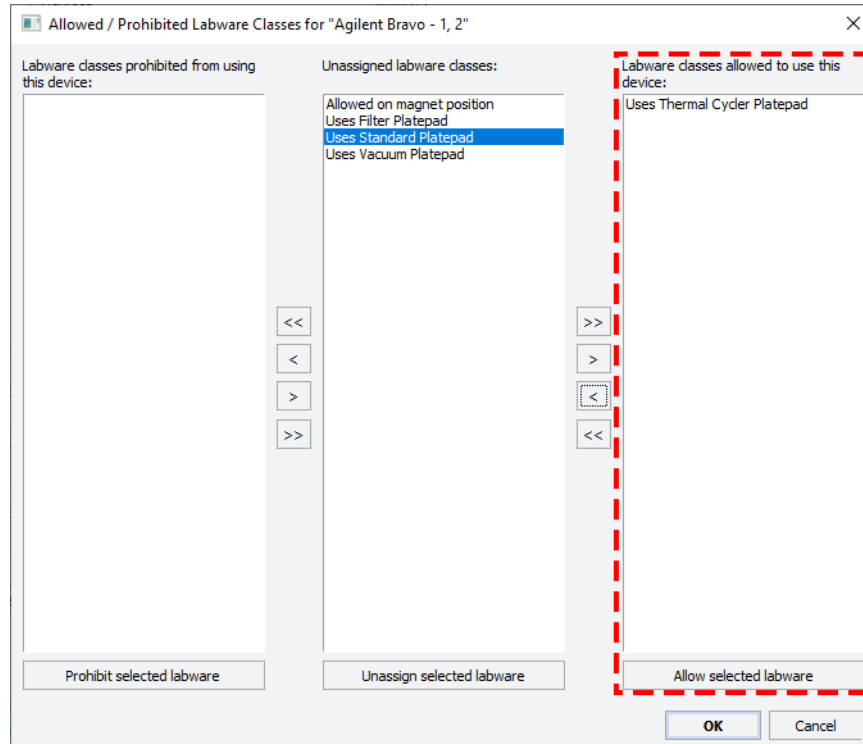
2 Setting up Bravo ODTC

Setting the labware class

The Allowed/Prohibited Labware Classes dialog box opens for the selected location.



- 5 In the center pane, click **Uses Thermal Cycler Platepad**, and then click **>** to move this labware class to the right pane.
- 6 In the right pane, click **Uses Standard Platepad**, then click **<** to move this labware class left to the center pane.



- 7 Ensure that **Uses Thermal Cycler Platepad** is the only labware class remaining in the **Labware classes allowed to use this device** pane, and then click **OK**.
- 8 Click **File > Save** to save the changes to the device file.
- 9 *VWorks Plus only*. If an audit trail is being logged, the Audit Comment dialog box opens. Select or type the audit comment, and then click **OK**.

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3 ODTc protocol tasks

This chapter describes the VWorks protocol tasks that run the preloaded ODTc methods. The topics are:

- “ODTc Action (Agilent Bravo)” on page 42
- “ODTc Run Method (Agilent Bravo)” on page 46

For instructions on how to create a VWorks protocol, see the [VWorks Automation Control User Guide](#).

ODTC Action (Agilent Bravo)

Description

The ODTc Action (Agilent Bravo) ( ODTc Action (Agilent Bravo)) task runs Bravo ODTc pre-methods or methods before labware is mounted on the accessory. For example, some protocols require the ODTc to be preheated or chilled to a specific temperature before running a method with labware mounted on the device.

Note: You can add multiples of this task in the protocol to create an action list

Task is available for...	Task is available in...
Bravo Platform	Startup Protocol Main Protocol, Bravo Subprocess Cleanup Protocol

Requirements

Ensure the following:

- The VWorks device file you are using includes a Bravo device associated with a profile configured for the ODTc accessory.
- The relevant ODTc pre-methods and methods are preloaded on the ODTc accessory.

Task parameters

After adding the ODTc Action task at the desired point in the protocol, set the following parameters in the **Task Parameters** area:

Parameter	Description
Location	Select location 2, which is where the ODC is installed in the Bravo deck. <i>Note:</i> If the task is in a Bravo subprocess, the Bravo device specified by the Subprocess task is used. If the task is in the Startup or Cleanup protocol, the Task Parameters pane Device Selection specifies which Bravo to use.
Step 1	Select one of the following actions to perform as the first step in this task. <i>Note:</i> The temperature control action only applies if the method specifies post-method temperature control and no method is running. <ul style="list-style-type: none"> • Stop any running method, but don't interrupt temperature control. Stops any previously launched method that is still running. • Wait for any running method to finish and don't interrupt temperature control. If a method is running, the software will wait the specified time limit to allow the method to finish. Also, specify the Time limit for previous method parameter. • Stop any running method and temperature control. Stops any method in progress, and stops any post-method temperature control in progress.
Time limit for previous method (0 - 172800 s)	Available only if Wait for any running method to finish and don't interrupt temperature control is selected. Enter the number of seconds to allow for any running method to finish. If this value is greater than 0, the software will wait for the specified number of seconds. If the time limit is reached and the method is still running, the method will be stopped if the Stop previous method after time limit parameter is selected. <i>Note:</i> An error will occur if Stop previous method after time limit is not selected.
Stop previous method after time limit	Available only if Wait for any running method to finish and don't interrupt temperature control is selected. Select the check box to stop the method after the specified time limit.

3 ODC protocol tasks

ODTC Action (Agilent Bravo)

Parameter	Description
Step 2	Select one of the following ODC door operations to run after Step 1 completes: <ul style="list-style-type: none">• Leave door as-is• Close door• Open door
Step 3	Select the last action to perform during this task: <ul style="list-style-type: none">• Start a method. This option allows concurrent operation. The specified method is started on the ODC, the ODC Action task ends, and the software proceeds on to the next task in the protocol while the specified ODC method continues to run. Also specify the parameters for Method name, Priority, and Prevent access to location while method is running.• Do nothing else. Ends the ODC Action task after Step 2.• Run a method and wait for it to finish. Runs the specified method and allows it to finish before the ODC Action task ends. Also specify the parameters for Method name, Priority, and Prevent access to location while method is running.
Method name	Available only if the Step 3 action starts or runs a method. Specify the name of the method by doing one of the following: <ul style="list-style-type: none">• Select from a list of method names. <i>Note:</i> The list of method names appears here only if the Retrieve method names during initialization is specified in the profile configuration for the ODC or if the Re-read method names from accessory control is used in the ODC Diagnostics dialog box.• Use a JavaScript variable to specify the method name. For details on using JavaScript variables, see the Using simple variables topic in the VWorks Automation Control User Guide.• Enter the exact name of the method you want to run (case sensitive).
Priority	Select the appropriate priority for the specified method: <ul style="list-style-type: none">• Standard• Finish after 40 seconds Pre-Methods can be run using either priority. Regular methods should only be run with a priority of Standard.
Time limit (0 - 172800 s)	Available only if the Step 3 action specifies Run a method and wait for it to finish . Enter the number of seconds to allow for the method to finish: <ul style="list-style-type: none">• If the value is greater than 0, the task will only wait for the number of seconds specified.• A value of 0 or blank results in no time limit. <i>Note:</i> An error message displays if the method has not finished by the specified time limit.

Parameter	Description
Prevent access to location while method is running	<p>Select this check box to prevent the Bravo from picking or placing labware at the ODC while the method is running.</p> <p>Clear this check box to allow the Bravo to pick or place labware at the ODC while the method is running.</p> <p><i>Note:</i> While a method is running you cannot open or close the ODC door.</p> <p><i>Note:</i> If VWorks schedules a pick or place at the ODC location while the ODC door is closed, the method is prematurely interrupted so that the ODC door can be opened.</p>

Related information

For information about...	See...
Creating protocols	VWorks Automation Control User Guide VWorks Protocol Authors Quick Guide
Displaying the ODC method names in the VWorks task	"Configuring ODC in Bravo profile" on page 21

ODTC Run Method (Agilent Bravo)

Description

The ODC Run Method (Agilent Bravo) ( ODC Run Method (Agilent Bravo)) task runs a method while the appropriate labware is mounted on the ODC accessory.

Task is available for...	Task is available in...
Bravo Platform	Main Protocol, Bravo Subprocess

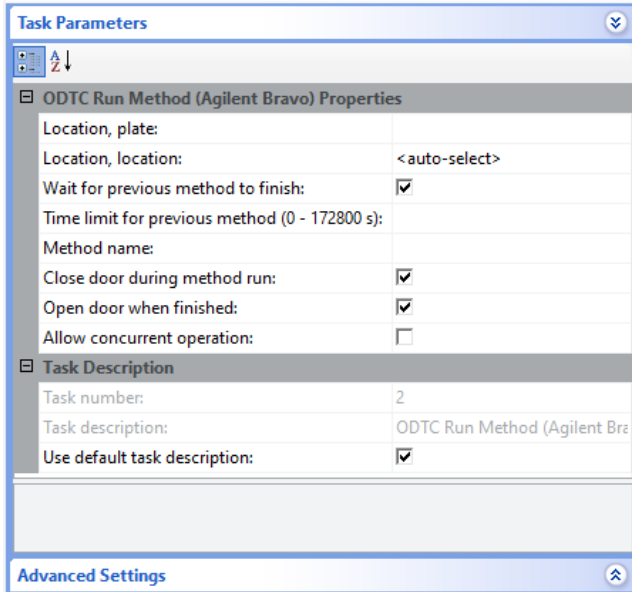
Requirements

Ensure that the following requirements are met:

- The device file associated with the protocol includes a Bravo profile with a configured ODC accessory. See [“Configuring Bravo ODC accessory” on page 21](#).
- The relevant ODC methods have been preloaded on the ODC accessory.
- ODC-compatible labware is used for the task. See [“Labware requirements” on page 10](#).

Task parameters

After adding the ODC Run Method task at the desired point in the protocol, set the following parameters in the **Task Parameters** area:



The screenshot shows the 'Task Parameters' dialog box for the 'ODTC Run Method (Agilent Bravo)' task. The dialog is divided into two main sections: 'ODTC Run Method (Agilent Bravo) Properties' and 'Task Description'. The 'Properties' section includes fields for 'Location, plate:', 'Location, location:' (set to '<auto-select>'), 'Wait for previous method to finish:' (checked), 'Time limit for previous method (0 - 172800 s):', 'Method name:', 'Close door during method run:' (checked), 'Open door when finished:' (checked), and 'Allow concurrent operation:' (unchecked). The 'Task Description' section includes 'Task number:' (set to 2), 'Task description:' (set to 'ODTC Run Method (Agilent Bra...)', and 'Use default task description:' (checked). At the bottom, there is an 'Advanced Settings' section with an upward arrow icon.

Parameter	Description
Location, Plate	Select the process or static labware involved in the task. Ensure that the specified labware meets the requirements for the Bravo ODTc.
Location	Use <auto-select> or select location 2, which is the ODTc deck location.
Wait for previous method to finish	If you want the task to wait for any currently running method to complete before starting, select the check box and specify the Time limit for previous method parameter. To automatically stop any currently running method when the task starts, clear the check box.
Time limit for previous method (0 - 172800 s)	Specify the time (seconds) to allow any currently running method to finish before starting this task. <ul style="list-style-type: none"> If the value is greater than 0, the task will only wait for the number of seconds specified. A value of 0 or blank results in no time limit. <p><i>Note:</i> An error message displays if the method has not finished by the specified time limit.</p>
Method name	Specify the name of the method by doing one of the following: <ul style="list-style-type: none"> Select from a list of method names. <i>Note:</i> The list of method names appears here only if the Retrieve method names during initialization is specified in the profile configuration for the ODTc or if the Re-read method names from accessory control is used in the ODTc Diagnostics dialog box. Use a JavaScript variable to specify the method name. For details on using JavaScript variables, see the Using simple variables topic in the VWorks Automation Control User Guide. Enter the exact name of the method you want to run (case sensitive).
Close door during method run	Specify the position of the ODTc door while the method is running: <ul style="list-style-type: none"> Select the check box to automatically close the ODTc door before the method starts. If the Open door when finished check box is also selected, the door will open when the method (not pre-method) ends. If you also select Allow concurrent operation, the method must finish before the door opens. Clear the check box if the door should remain open during the thermal cycling method, for example, if you are doing a concurrent operation at this location.
Open door when finished	Specify the position of the ODTc door when the method is finished: <ul style="list-style-type: none"> Select the check box to automatically open the ODTc door after the method (not pre-method) ends, for example, if a Mix task occurs next at the ODTc location. Clear this check box to leave the ODTc door closed after the method ends.

3 ODTc protocol tasks

ODTC Run Method (Agilent Bravo)

Parameter	Description
Allow concurrent operation	<p>Select this check box if you want the method and pre-method, if specified, to run while the protocol proceeds on to the next task in the subprocess. The moment after the labware is placed at the ODTc, the ODTc Run Method task ends, but the specified method continues to run in the background.</p> <p>For example, you could run a pipetting task at the ODTc deck location while a thermal cycling method is running.</p> <p>Clear this check box if you want the ODTc Run Method task to continue to run until the method finishes before starting another task in the subprocess.</p>

Related information

For information about...	See...
Creating protocols	VWorks Automation Control User Guide VWorks Protocol Authors Quick Guide
Displaying the ODTc method names in the VWorks task	"Configuring ODTc in Bravo profile" on page 21
Labware compatible with Bravo ODTc	"Labware requirements" on page 10



4 Maintenance and troubleshooting

This chapter contains the following topics:

- “Routine maintenance” on page 50
- “ODTC troubleshooting guidelines” on page 51
- “Reporting problems” on page 53

Routine maintenance

Before you start

WARNING

To prevent potential injury, always turn off power to the Bravo Platform and the OTC device before performing any maintenance procedure.

To access the ODTC plate mount for cleaning, follow the instructions in the [Inheco ODTC User and Installation Manual](#) to manually open the ODTC door to the vertical position.

Agilent Technical Support is your primary contact if you have a problem with the Bravo ODTC accessory that you cannot resolve. See [“Reporting problems” on page 53](#) for instructions on contacting Agilent Technical Support.

Cleaning up spills and periodic cleaning

CAUTION

Use only the recommended cleaning materials. Using other cleaning solutions and materials can cause damage to the device. Do not use aggressive cleaning fluids such as acetone, or abrasive cleaners. The nickel teflon coating of the ODTC VCM (plate mount) and coatings of other components could be damaged.

CAUTION

Ensure that no liquids enter into the ODTC or Power & Control Unit.

Keep the area under and behind the Bravo deck clean and free of obstacles. The ventilation inlets on the Power & Control Unit and ODTC should be checked for contamination and should be cleaned if necessary.

The ODTC contact surfaces should be cleaned regularly to ensure optimum heat transfer to the PCR plate. Always clean the contact surface after a spillage.

Use a clean, soft cloth with a 50:50 water/isopropanol solution and make sure that no deposits are left on the surface.

ODTC troubleshooting guidelines

Agilent Technical Support is your primary contact if you have a problem with the Bravo ODTC accessory that you cannot resolve. See [“Reporting problems” on page 53](#) for instructions on contacting Agilent Technical Support.

Troubleshooting problems

This table lists some potential hardware and communication problems that you might encounter when using the Bravo ODTC. If you encounter a problem, locate the problem under one of the following categories, and try the recommended solution to resolve the problem.

Problem	Possible cause	Solution
The Bravo ODTC does not turn on.	The device electrical requirements are not met.	Ensure that the site meets all the electrical requirements for the Bravo Platform. See the G5562A, G5563A Bravo Platform Safety and Installation Guide . Turn on the ODTC Power & Control Unit (PCU) power switch.
	The ODTC is not connected to the Power & Control Unit (PCU), or the PCU is not connected to a power source.	Inspect the power cords and connections and ensure that you are using the Agilent-supplied country-specific power cord. Turn on the ODTC PCU power switch.
The ODTC does not initialize when the Bravo profile is initialized.	The ODTC was not fully booted when the Bravo profile was initialized.	When the ODTC is powered on, its indicator light flashes green for up to a minute while the ODTC firmware is booting. Wait for a few seconds after this green light stops flashing before attempting to initialize the Bravo profile.
	The SiLA XMLRPC Server is not running.	The SiLA XMLRPC Server must be running to enable VWorks communication with the Bravo ODTC device.

4 Maintenance and troubleshooting

ODTC troubleshooting guidelines

Problem	Possible cause	Solution
The ODTC door (lid) malfunctions.	An object is blocking the door or incompatible labware is being used on the ODTC.	Ensure the following; <ul style="list-style-type: none">• An object is not blocking the door.• You are using only approved labware at the ODTC. See “Labware requirements” on page 10.
	The PCR plate is sitting too high on the ODTC plate mount.	Determine if the door has clearance when the labware is on the plate mount. If necessary, reconfigure the accessory in the Bravo profile and adjust the Teachpoint Z offset value. See “Configuring ODTC in Bravo profile” on page 21.
	The ODTC Sealing Cover is installed in the door but has dismounted or requires replacement.	See the Inheco ODTC User and Installation Manual for instructions.
PCR plates are not firmly seated on the ODTC mount when placed there by the Bravo gripper.	Incompatible labware is being used on the ODTC.	Use only approved labware at the ODTC. See “Labware requirements” on page 10. If necessary, reconfigure the accessory in the Bravo profile and adjust the Teachpoint Z offset value. See “Configuring ODTC in Bravo profile” on page 21.
Labware is stuck in the ODTC plate mount.	Incompatible labware is being used on the ODTC.	Use only approved labware at the ODTC. See “Labware requirements” on page 10. If you need to replace the plate ejection bars, see Inheco ODTC User and Installation Manual for instructions.
ODTC is overheating or has fan issues.	An object or objects are blocking the free air flow at the ODTC ventilation inlet or outlet.	Ensure that the area below the Bravo deck is clear of any obstacles that could restrict the ODTC airflow. Do not cover the ODTC ventilation inlet at the front or the exhaust outlet underneath the unit at any time. Keep the air inlet clean. See “Bravo ODTC components” on page 5.
ODTC Power & Control Unit is overheating.	An object or objects are blocking the free air flow at the PCU ventilation inlet or outlet.	Ensure enough free space in front and back of the PCU. Keep the air inlets clean on the front of the PCU. See “ODTC Power & Control Unit” on page 7.

Getting ODTC status and error information

The *Inheco ODTC Device Manager User's Manual* describes how to use the ODTC Device Manager software for

- IP settings
- Downloading log and trace files from the ODTC for support
These files contain status and error information for troubleshooting problems with the ODTC.
- Malfunctions and error messages

Inheco ODTC support pages

Product support information for the ODTC is posted in the Inheco web pages at <https://www.inheco.com/>

After registering to use the web pages, you can access the following:
Product Support > ODTC > Knowledge Base and Errors List

Reporting problems

This topic describes for how to report hardware, software, and user guide problems.

Contacting technical support

If you find a problem with the VWorks software, contact Agilent Technical Support. For contact information, go to <https://www.agilent.com/en-us/contact-us/page>.

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

Reporting hardware problems

When contacting Agilent Technical Support, make sure you have the serial number of the device or workstation ready. See the device user guide for the location of the label.

Reporting software problems

When you contact Agilent 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.

4 Maintenance and troubleshooting

Reporting problems

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 an email to documentation.automation@agilent.com.

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In this guide

This guide describes:

- Bravo ODTc accessory features
- How to configure the accessory
- VWorks ODTc protocol tasks

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