Direct Drive Robot

Site Preparation and Safety Guide

Original Instructions

Agilent Technologies

Notices

User Guide Part Number

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Safety Notices

A WARNING 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 personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

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.

Agilent Technologies	**EC DECLARATION OF INCORPORATION (original)** **in accordance with EN ISO 17050-1:2004**	CE

Manufacturer's Name: Agilent Technologies, Inc.,
(Automation Solutions Division)

Manufacturer's Address: 5301 Stevens Creek Blvd.
Santa Clara, CA 95051
USA

hereby declares that:

- Equipment — Direct Drive Robot
- Serial number — Shown on the equipment

is incomplete machinery, and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of Machinery Directive 2006/42/EC. The equipment complies with all applicable Essential Health and Safety Requirements (EHSRs) except:

1.2.4.3 — Emergency stop
1.3.1 — Stability
1.3.7 — Moving parts
1.3.8 — Guards

We undertake to transmit, via email, relevant information on the partly completed machinery in response to a reasoned request by national authorities.

Name and address of the person established in the Community authorized to compile the technical file or the relevant technical documents:

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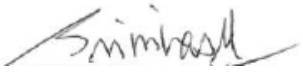


_____ Santa Clara, CA December 18th, 2009
Bob Srinivas
Quality Manager

Contents

Preface

This preface contains the following topics:

About this guide

Who should read this guide

This guide is for people with the following job roles:

Job role	Responsibilities
Installer	Unpacks, installs, and tests the Direct Drive Robot before it is used.
Integrator	Writes software and configures hardware controlled by the VWorks software.
Lab manager, administrator, or technician	• Manages the automation system containing the Direct Drive Robot • 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 system that contains the Direct Drive Robot.

Installers, integrations, lab managers, and administrators are users who must have technical expertise. In addition, lab managers and administrators are individuals or groups responsible for the use and maintenance of the Direct Drive Robot and for ensuring that operators are adequately trained.

What this guide covers

This guide describes the following:

- Potential safety hazards of the Direct Drive Robot and how to avoid them.
- Specifications and site requirements for the Direct Drive Robot. Use this information to plan the space for the Direct Drive Robot. Make sure your site meets the requirements outlined in this guide before installing the robot.

Related guides

The *Direct Drive Robot Site Preparation and Safety Guide* should be used in conjunction with the following user documents:

- *Direct Drive Robot User Guide*. Explains how to set up and operate the Direct Drive Robot.
- *VWorks Automation Control Setup Guide*. Explains how to define labware, track labware, and manage users.
- *VWorks Automation Control User Guide*. Explains how to add devices, create protocols, and set task parameters for each device in the system.
- *VWorks Software Quick Start*. Provides an overview of how to use the VWorks Automation Control software.
- *Automation Solutions device user guides*. Explain how to set up and use the Automation Solutions devices.
- *Third-party device user documents*. Explain how to set up and use the third-party devices.

Related topics

For information about...	See...
Accessing related user guides	"Accessing Automation Solutions user guides" on page x
Using the knowledge base	"Using the knowledge base" on page x
Reporting problems	"Reporting problems" on page xiii

Accessing Automation Solutions user guides

About this topic

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

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 of 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 Technologies website*. You can search the online knowledge base or download the latest version of any PDF file from the Agilent Technologies website at www.agilent.com/lifesciences/automation.

Accessing safety information

Safety information for the Agilent Technologies devices appears in the corresponding device user guide.

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

Using the knowledge base

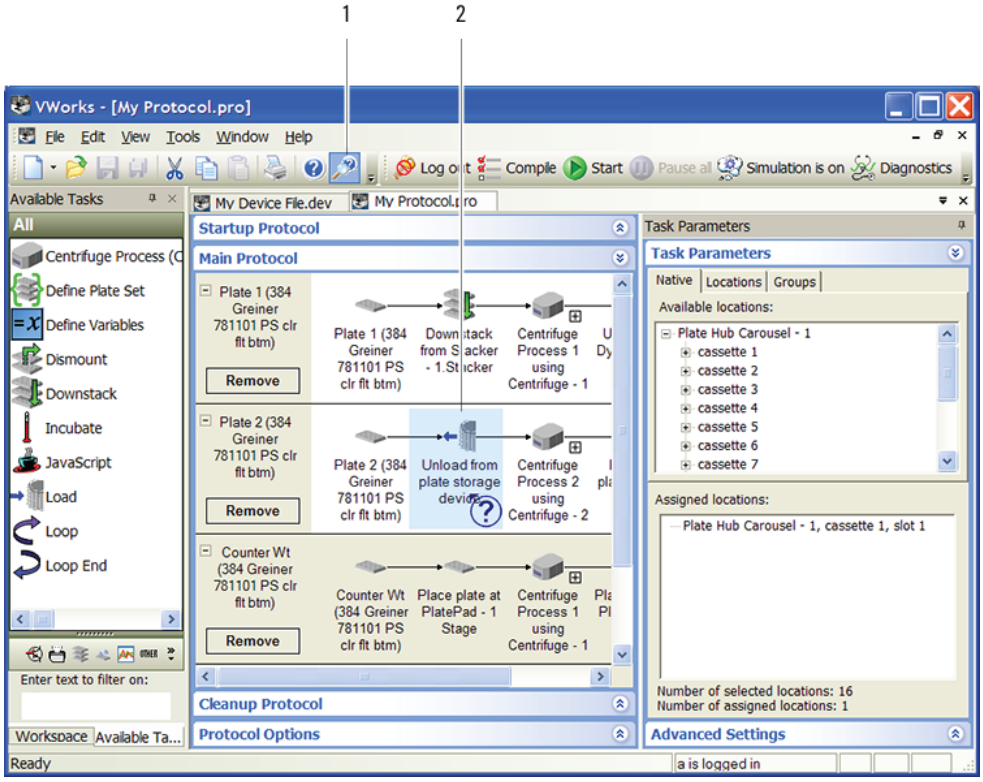
Knowledge base topics are displayed using web browser software such as Microsoft Internet Explorer and Mozilla Firefox.

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, select **Start** > **All Programs > Agilent Technologies > VWorks** > **User Guides** > **Knowledge Base.**

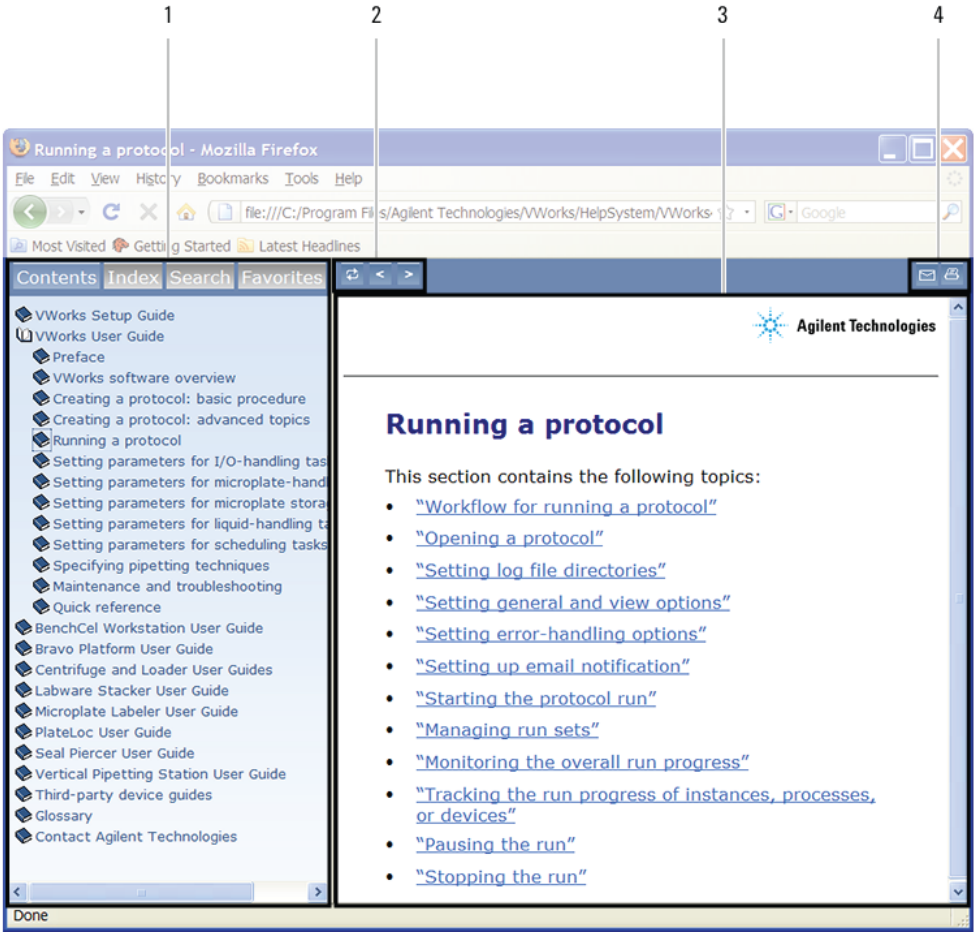
Opening the help topic for an area in the VWorks window



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	*Navigation area.* Consists of four tabs: • *Contents.* Lists all the books and the table of contents of the books. • *Index.* Displays the index entries of all of the books. • *Search.* Allows you search the Knowledge Base (all products) using keywords. You can narrow the search by product. • *Favorites.* Contains bookmarks you have created.
2	*Navigation buttons.* Enable you to navigate through the next or previous topics listed in the Contents tab.
3	*Content area.* Displays the selected online help topic.
4	*Toolbar buttons.* Enable you to print the topic or send documentation feedback by email.

Related topics

For information about...	See...
Who should read this guide	"Who should read this guide" on page viii
What this guide covers	"What this guide covers" on page viii
Reporting problems	"Reporting problems" on page xiii

Reporting problems

Contacting Automation Solutions Technical Support

If you find a problem with the Direct Drive Robot, contact Automation Solutions Technical Support at one of the following:

Europe

Phone: +44 (0)1763850230

email: euroservice.automation@agilent.com

US and rest of world

Phone: 1.800.979.4811 (US only) or +1.408.345.8011

email: service.automation@agilent.com

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 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.

Related topics

For information about...	See...
Who should read this guide	"Who should read this guide" on page viii
What this guide covers	"What this guide covers" on page viii
Accessing user information	"Where to find user information" on page x
Using the knowledge base	"Using the knowledge base" on page x

1 Safety

This chapter contains the following topics:

General safety information

Before installing and using the Direct Drive Robot

The Direct Drive Robot is designed for safe operation. When the Direct Drive Robot is installed correctly, you are protected from moving parts and hazardous voltage. However, you must be aware of the potential hazards and understand how to avoid being exposed to them.

Before installing and using the Direct Drive Robot, make sure you are properly trained in the correct and safe installation and operation of the robot.

EU installations only. Be aware that the Direct Drive Robot is considered incomplete machinery and must be installed to comply with the essential health and safety requirements (EHSRs) of the Machinery Directive 2006/42/EC.

Intended product use

WARNING **Do not remove the Direct Drive Robot exterior covers or otherwise disassemble the robot. Doing so can cause injuries and damage the Direct Drive Robot.**

Agilent Technologies products must only be used in the manner described in the Agilent Technologies product user guides. Any other use may result in damage to the product or personal injury. Agilent Technologies is not responsible for any damages caused, in whole or in part, by improper use of the products, unauthorized alterations, adjustments or modifications to the products, failure to comply with procedures in Agilent Technologies product user guides, or use of the products in violation of applicable laws, rules or regulations. Except as otherwise expressly provided in Agilent Technologies product user guides, any alteration, adjustment or modification to the products will void the product warranty.

The Direct Drive Robot is not intended or approved for diagnosis of disease in humans or animals. You assume full responsibility for obtaining any regulatory approvals required for such use and assume all liability in connection therewith.

Related information

For information about...	See...
Safety and regulatory certifications	“Safety and regulatory certifications” on page 3
Emergency stop	“Emergency stop” on page 5
High-force hazards	“High-force hazards” on page 6
Mechanical hazards	“Mechanical hazards” on page 7
Electrical hazards	“Electrical hazards” on page 9

Safety and regulatory compliance

Compliance standards

See Declaration of Conformity and Declaration of Incorporation for details.

CE marking	Standard
EMC Directive	2004/10/EC
EMC	IEC 61326-1:2005 / EN 61326-1:2006
EM Emissions	CISPR 11:2004 / EN 55011:2007 (Class A)
Low Voltage Directive	2006/95/EC
Safety	IEC 61010-1:2001 / EN61010-1:2001
EMC	
Canada	ICES-001:2004
Australia/New Zealand	AS/NZS CISPR 11:2002
CSA/Safety	
Canada	CAN/CSA-C22.2 No. 61010-1-04
USA	ANSI/UL 61010-1:2004

Electromagnetic compatibility

If the robot causes interference with radio or television reception, which can be determined by turning the robot off and on, try one or more of the following measures:

- Relocate the radio or television antenna.
- Move the device away from the radio or television.
- Plug the device into a different electrical outlet, so that the device and the radio or television is on separate electrical circuits.
- Make sure that all peripheral devices are also certified.
- Make sure that appropriate cables are used to connect the device to peripheral equipment.
- Consult your equipment dealer, Agilent Technologies, or an experienced technician for assistance.
- Changes or modifications not expressly approved by Agilent Technologies could void the user's authority to operate the equipment.

Sound emission declaration

Sound pressure: Lp < 70 dB according to EN 27779:1991.

Schalldruckpegel: LP < 70 dB nach EN 27779:1991.

Symbols

Warnings in the user documentation or on the instrument must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions violates safety standards of design and the intended use of the product. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

Symbol	Description
	See accompanying instructions for more information.
	Indicates hazardous voltages.
	Indicates pinch, crush, and cut hazard.
	Indicates that you must not discard this electrical/ electronic product in domestic household waste.

Related information

For information about...	See...
General safety information	"General safety information" on page 2
Emergency stop	"Emergency stop" on page 5
High-force hazards	"High-force hazards" on page 6
Mechanical hazards	"Mechanical hazards" on page 7
Electrical hazards	"Electrical hazards" on page 9

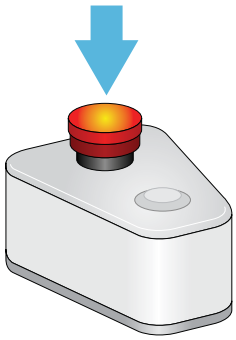
Emergency stop

Emergency stop pendant

The Direct Drive Robot is equipped with an emergency stop pendant. Pressing the red button on the pendant cuts power to the robot motors and stops the robot during an emergency.

If the robot is integrated with other devices in a system, Agilent Technologies recommends that you install a main emergency stop button to cut power to the robot and all devices simultaneously.

Figure Emergency stop pendant.



Related information

For information about...	See...
General safety information	“General safety information” on page 2
Safety and regulatory certification	“Safety and regulatory certifications” on page 3
High-force hazards	“High-force hazards” on page 6
Mechanical hazards	“Mechanical hazards” on page 7
Electrical hazards	“Electrical hazards” on page 9

High-force hazards

Direct Drive Robot inertia

The Direct Drive Robot has relatively low inertia and is designed to stop its movement when it comes in contact with an obstacle. However, you can be injured if you obstruct the robot while it is in motion.

Agilent Technologies highly recommends that you install the robot inside an enclosure. Safety-interlocked doors or light curtains that stops the robot when opened or interrupted can be used to further mitigate risk. Make sure the safety-interlocked enclosure complies with your country's safety regulations.

EU installations only. The enclosure and other safety recommendations are required so that the Direct Drive Robot installation is compliant with the provisions of the Machinery Directive 2006/42/EC.

Related information

For information about...	See...
General safety information	“General safety information” on page 2
Safety and regulatory certification	“Safety and regulatory certifications” on page 3
Emergency stop	“Emergency stop” on page 5
Mechanical hazards	“Mechanical hazards” on page 7
Electrical hazards	“Electrical hazards” on page 9

Mechanical hazards

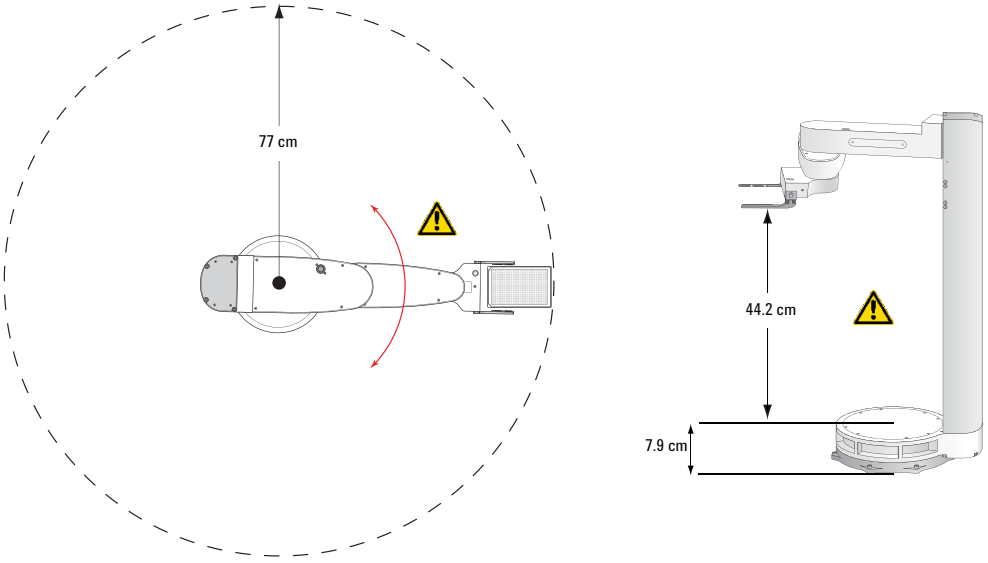
Moving-parts hazards

The following diagram shows the robot's maximum radial and vertical reach. The radial reach includes a typical microplate held in portrait orientation.

WARNING **Keep clear of the robot's reach when it is in motion. Keep your fingers, hair, clothing, and jewelry away from the robot while it is in motion.**

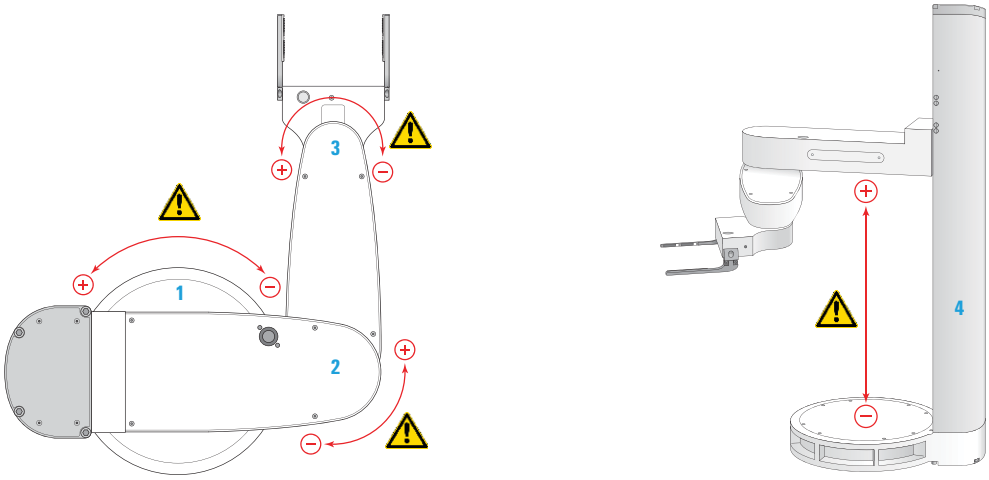
WARNING **The robot does not always move in a straight line between teachpoints. Do not try to predict the robot's movements and reach into the robot's travel space while it is in operation.**

Figure Direct Drive Robot radial (top view) and vertical reach (side view).



Pinch hazards

The Direct Drive Robot has four axes of motion:



Item	Axis	Description of robot movement
1	Waist	Robot arm rotates infinitely about the waist.
2	Elbow	Robot forearm rotates infinitely about the elbow.
3	Wrist	Robot hand rotates infinitely about the wrist.
4	Mast	Robot arm moves up and down along the mast.

WARNING **Keep clear of the robot while it is in motion. The robot could pinch or bruise you near the axes.**

Puncture hazards

The tapered robot grippers and the robot's low inertia are features that are designed to prevent puncture or other injuries. However, you can be injured if you obstruct the robot while it is in motion.

WARNING **Keep clear of the robot and its grippers while it is in motion.**

Related information

For information about...	See...
General safety information	“General safety information” on page 2
Safety and regulatory certification	“Safety and regulatory certifications” on page 3
Emergency stop	“Emergency stop” on page 5
High-force hazards	“High-force hazards” on page 6
Electrical hazards	“Electrical hazards” on page 9

Electrical hazards

Hazardous-voltage electronics

Hazardous-voltage electronics can be found within the Direct Drive Robot and the power supply unit. Under normal operating conditions, you are protected from exposure to the hazardous voltage.

WARNING **Do not try to gain access to the interior of the Direct Drive Robot or its power supply. Do not remove panels for any reason. Exposure to the interior electronics of the robot or its power supply can cause severe injury.**

WARNING **Ensure that the power cord and robot cable are in good condition and are not frayed. Use of a frayed or damaged power cord and robot cable can cause injury. Use of incorrect power cord can cause damage to the robot.**

WARNING **Always turn off electrical power and disconnect the power cord before installing or servicing the robot.**

Related information

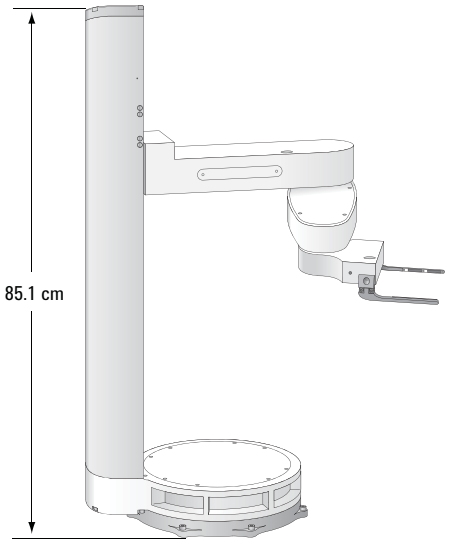
For information about...	See...
General safety information	“General safety information” on page 2
Safety and regulatory certification	“Safety and regulatory certifications” on page 3
Emergency stop	“Emergency stop” on page 5
High-force hazards	“High-force hazards” on page 6
Mechanical hazards	“Mechanical hazards” on page 7

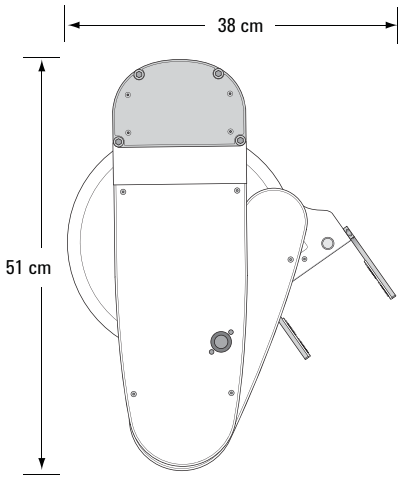
2 Specifications

This chapter contains the following topics:

Physical dimensions

Robot dimensions



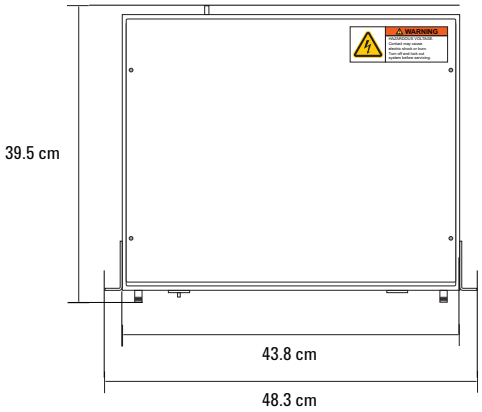


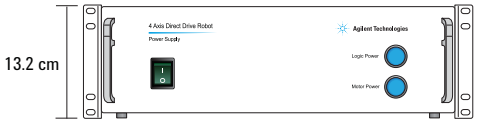
Dimension	Value
Height	85.1 cm (33.5 in)
Width (home position)	51 cm (20 in)
Depth (home position)	38 cm (15 in)
Weight	31.1 kg (68.5 lb)

Grippers: 6 mm thick titanium, with replaceable rubber gripping pads
Robot cable: 2.4 m (8.0 ft), 1.2 kg (2.6 lb)

Power supply dimensions

Power supply (G5411-60010)

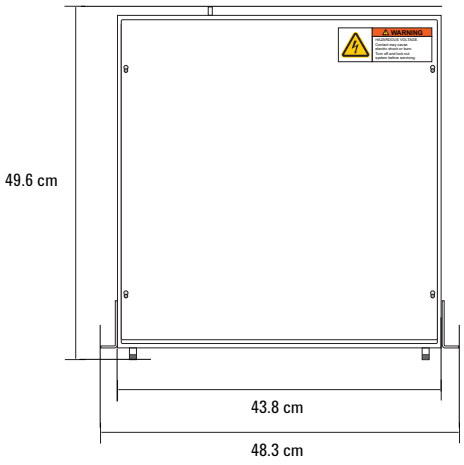




Dimension	Value
Width:	
Without mounting bracket	43.8 cm (17.3 in)
With mounting bracket	48.3 cm (19.0 in)
Depth	39.5 cm (15.5 in)
Height	13.2 cm (5.2 in)
Weight	9.7 kg (21.4 lb)

Power cord: 2 m (6 ft)

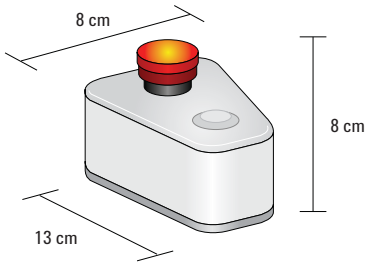
Power supply (G5411-60005)



Dimension	Value
Width	
Without mounting bracket	43.8 cm (17.3 in)
With mounting bracket	48.3 cm (19.0 in)
Depth	49.6 cm (19.5 in)
Height	14.0 cm (5.5 in)
Weight	13.8 kg (30.4 lb)

Power cord: 2 m (6 ft)

Emergency stop pendant dimensions



Dimension	Value
Width	8 cm (3 in)
Depth	13 cm (5 in)
Height	8 cm (3 in)

Emergency stop pendant cable: 2 m (6 ft)

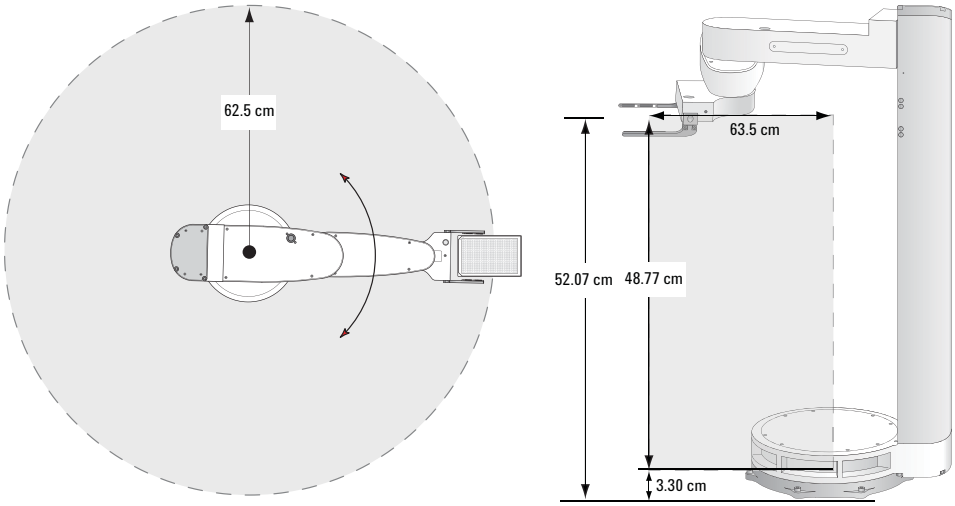
Related information

For information about...	See...
Robot reach and workspace	“Reach and workspace” on page 16
Axis and gripper specifications	“Axis and gripper specifications” on page 19
Performance specifications	“Performance specifications” on page 21
Mounting specifications	“Mounting specifications” on page 22
Electrical requirements	“Electrical requirements” on page 25
Computer requirements	“Computer requirements” on page 27
Environmental requirements	“Environmental requirements” on page 26

Reach and workspace

Robot reach

Figure Direct Drive Robot radial reach at 0° wrist angle and vertical reach.



Maximum reach	Value
Radial reach (based on wrist angle)	Center of rotation to center of microplate 0–15°: 63.5 cm (25.0 in) 30°: 61.5 cm (24.2 in) 45°: 58.2 cm (22.9 in) 60°: 54.1 cm (21.3 in) 90°: 45.3 cm (17.8 in)
Vertical reach (from attachment surface)	Minimum: 3.30 cm (1.30 in) Maximum: 52.07 cm (20.50 in) Highest teachpoint with 0 offset: 50.39 cm (19.84 in)

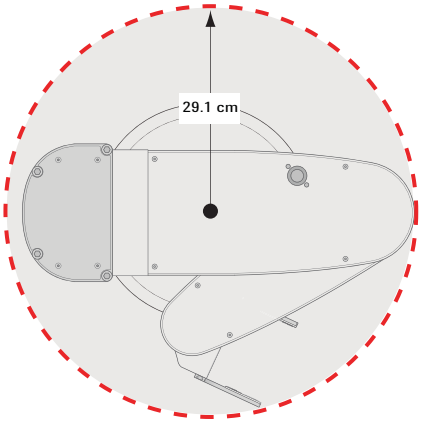
Safe zone

The safe zone is the cylindrical region within which the Direct Drive Robot is allowed to move without colliding with external devices. In general, the robot moves into the safe zone to change its arm orientation, rotate its wrist, or for other purposes after it completes a Move to, Pick from, Place to, or Transfer command.

CAUTION Do not set teachpoints within the safe zone.

The following diagram shows the top view of the robot safe zone. It is the cylindrical region within the dotted line. The radius of the cylinder, measured from the center of the base, is 29.1 cm (11.4 in).

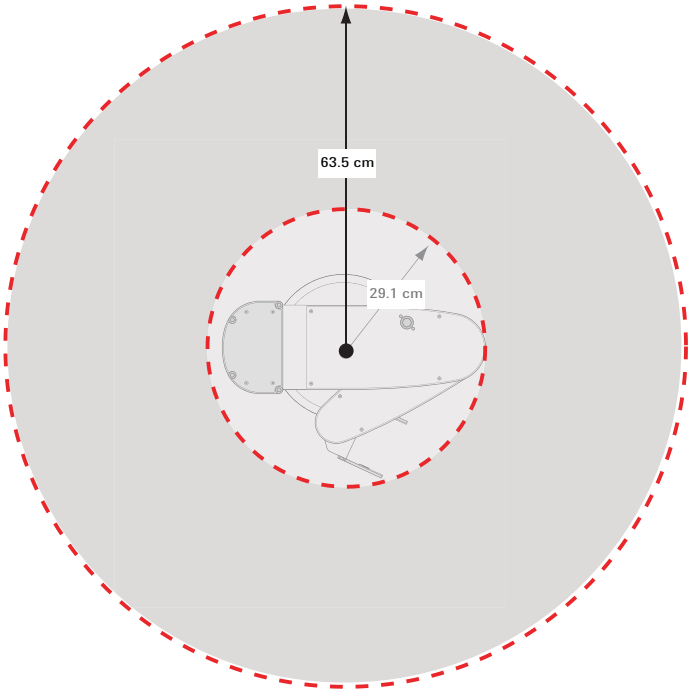
Figure Direct Drive Robot safe zone



Teachpoint zone

The teachpoint zone is the region within which you can set teachpoints. The following diagram shows the top view of the teachpoint zone. The outermost dotted line shows the robot's maximum reach. The cylindrical region within the inner circle is the the safe zone. The teachpoint zone is between the two boundaries.

Figure Direct Drive Robot teachpoint zone

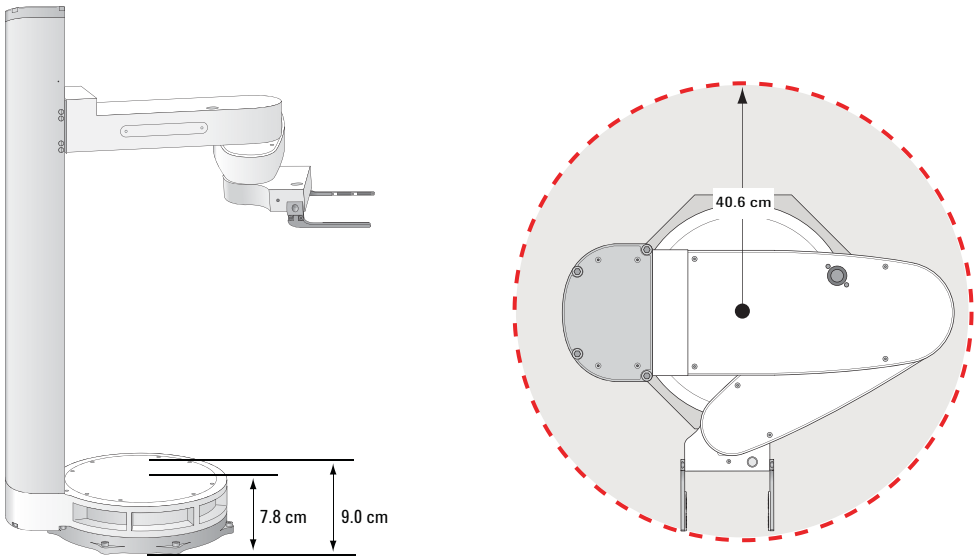


Caution zone

The caution zone is the thin, doughnut-shaped region surrounding the robot waist and base. When the robot moves to and from a teachpoint within this zone, the back of its wrist might bump into the waist. To avoid such collisions, you can change the position of the teachpoint such that the robot will approach or retract from the location using an alternate angle.

The following diagram shows the caution zone. The height of the region is measured from the attachment surface to 1.2 cm above the top surface of the waist. The radius of the region is 40.6 cm (16 in). These measurements assume the use of the standard grippers and teaching jig.

Figure Direct Drive Robot caution zone



Related information

For information about...	See...
Robot dimensions	“Physical dimensions” on page 12
Axis and gripper specifications	“Axis and gripper specifications” on page 19
Performance specifications	“Performance specifications” on page 21
Mounting specifications	“Mounting specifications” on page 22
Electrical requirements	“Electrical requirements” on page 25
Computer requirements	“Computer requirements” on page 27
Environmental requirements	“Environmental requirements” on page 26

Axis and gripper specifications

Waist	
Travel	Infinite rotation
Maximum rated torque	362.55 Nm (267.41 lb-ft)
Maximum continuous stall torque at temperature rise 75.000 °C	25.74 Nm (18.99 lb-ft)
Maximum velocity	400°/s
Elbow	
Travel	Infinite rotation
Maximum rated torque	36.68 Nm (5193.73 oz-in)
Maximum continuous stall torque at temperature rise 75.000 °C	2.86 Nm (404.61 oz-in)
Maximum velocity	425°/s
Wrist	
Travel	Infinite rotation
Maximum rated torque	14.23 Nm (2014.90 oz-in)
Maximum continuous stall torque at temperature rise 75.000 °C	0.58 Nm (81.73 oz-in)
Maximum velocity	540°/s
Z-axis	
Travel	3.30–52.07 cm (1.30–20.50 in) from the attachment surface
Maximum rated force	420 N (94.4 lb)
Maximum continuous stall force at coil temperature 100 °C	120.2 N (27.0 lb)
Maximum velocity	1000 mm/s
Gripper	
Travel	Closed: 76.5 mm Open: 136 mm
Force	0–2 kg

Related information

For information about...	See...
Robot dimensions	“Physical dimensions” on page 12
Robot reach and workspace	“Reach and workspace” on page 16
Performance specifications	“Performance specifications” on page 21
Mounting specifications	“Mounting specifications” on page 22
Electrical requirements	“Electrical requirements” on page 25
Computer requirements	“Computer requirements” on page 27
Environmental requirements	“Environmental requirements” on page 26

Performance specifications

Performance	
Labware width	Minimum: 80 mm (portrait) Maximum: 133 mm (landscape)
Payload	SBS microplates Full speed: 200 g Maximum: 500 g
Repeatability	x, y, z: ±0.1 mm Phi: ±0.02°
Transfer time	Pick-and-place: < 4 s average

Related information

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Robot dimensions	“Physical dimensions” on page 12
Robot reach and workspace	“Reach and workspace” on page 16
Axis and gripper specifications	“Axis and gripper specifications” on page 19
Mounting specifications	“Mounting specifications” on page 22
Electrical requirements	“Electrical requirements” on page 25
Computer requirements	“Computer requirements” on page 27
Environmental requirements	“Environmental requirements” on page 26

Mounting specifications

Attachment surface

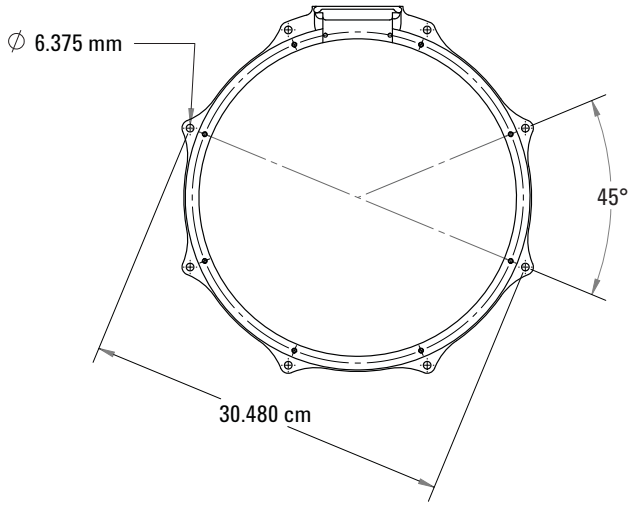
The Direct Drive Robot must be installed vertically on a flat stiff surface that is stable. A deformable and non-stable support will greatly reduce the robot's speed and accuracy, and possibly cause errors.

EU installations only. The stable surface recommendation is required so that the Direct Drive Robot installation is compliant with the provisions of the Machinery Directive 2006/42/EC.

Mounting bolts

Eight bolts are required to hold the Direct Drive Robot to the attachment surface. The following diagram shows the base of the robot and the spacing of the holes for the bolts.

Figure Direct Drive Robot mounting base

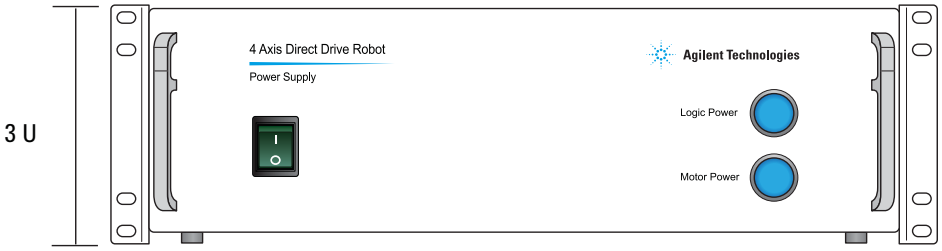


Mounting requirement	Measurement
Bolt hole diameter	6.375 mm (0.251 in), through the base
Bolt type	M6
Number of bolts	8
Bolt-circle diameter	30.480 cm (12.000 in)
Mounting base – height	0.952 cm (0.375 in)

Power supply

The power supply has two mounting brackets as the following diagram shows. The brackets are 3 rack units (or 3U) in overall height, and permit the power supply to be mounted in a standard 19-inch rack.

Figure Direct Drive Robot power supply (front view)



CAUTION Air vents are on the left and right sides of the power supply. Be sure to provide at least 1.3 cm (0.5 in) of clearance on both sides.

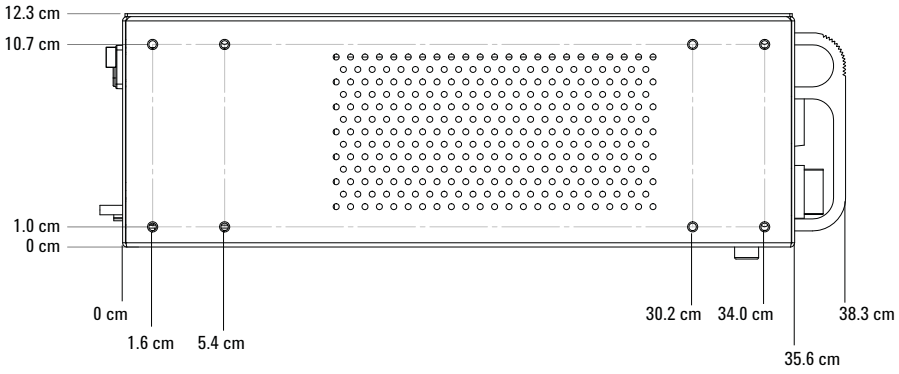
IMPORTANT Because of its weight, Agilent Technologies recommends that you mount the power supply at the bottom of the rack. Mounting the power supply at the bottom of the rack also facilitates service access.

IMPORTANT If you must mount power supply G5411-60005 higher in a rack, be sure to use additional brackets at the back end to support the weight of the power supply. To order the support brackets, contact Automation Solutions Customer Service.

To mount the power supply vertically, turn the power supply onto its left side only (power switch is on the bottom, indicator lights are on top). When mounting the power supply vertically, you can remove the supplied mounting brackets and install desired mounting components. To order vertical mounting brackets, contact Automation Solutions Customer Service.

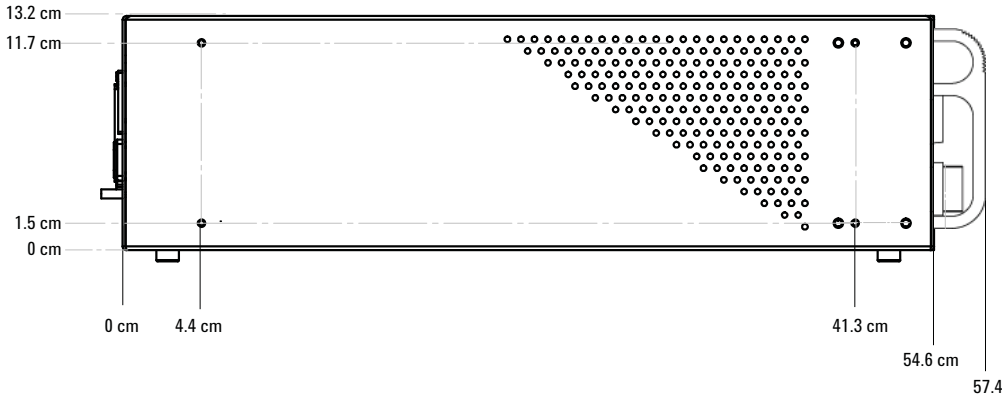
The following diagram shows the specifications for the left side of power supply G5411-60010. The holes are M4 x 0.7 screw thread.

Figure Direct Drive Robot power supply (G5411-60010) left side specifications



The following diagram shows the specifications for the left side of power supply G5411-60005. The holes are M4 x 0.7 screw thread.

Figure Direct Drive Robot power supply (G5411-60005) left side specifications



CAUTION Do not block the air vent. Be sure to provide at least 1.3 cm (0.5 in) of clearance on the bottom when mounting the power supply vertically.

Related information

For information about...	See...
Robot dimensions	"Physical dimensions" on page 12
Robot reach and workspace	"Reach and workspace" on page 16
Axis and gripper specifications	"Axis and gripper specifications" on page 19
Performance specifications	"Performance specifications" on page 21
Electrical requirements	"Electrical requirements" on page 25
Computer requirements	"Computer requirements" on page 27
Environmental requirements	"Environmental requirements" on page 26

Electrical requirements

Requirement	Value
Voltage	100–240 VAC
Frequency	50/60 Hz
Current	10 A
Power consumption	200 W typical
Fuses	• *Mains.* 2 × 10 A, 250 V, time delay • *Logic power/switch.* 2 A, 250 V, time delay (only in model G5411-60005) • *Robot.* 4 A, 250 V, time delay • *Emergency stop pendant.* 0.8 A, 250 V, time delay (only in model G5411-60005)
Chassis plug	IEC 60320 C14

Related information

For information about...	See...
Robot dimensions	“Physical dimensions” on page 12
Robot reach and workspace	“Reach and workspace” on page 16
Axis and gripper specifications	“Axis and gripper specifications” on page 19
Performance specifications	“Performance specifications” on page 21
Mounting specifications	“Mounting specifications” on page 22
Computer requirements	“Computer requirements” on page 27
Environmental requirements	“Environmental requirements” on page 26

Environmental requirements

Ambient environment

IMPORTANT The Direct Drive Robot must operate within the temperature and humidity specifications stated in the following table.

Operating	Recommended range
Temperature	4–40 °C
Humidity	10–90% RH, non-condensing
Storage (non-operating)	**Recommended range**
Temperature	-20–50 °C
Humidity	0–90% RH, non-condensing

Related information

For information about...	See...
Robot dimensions	“Physical dimensions” on page 12
Robot reach and workspace	“Reach and workspace” on page 16
Axis and gripper specifications	“Axis and gripper specifications” on page 19
Performance specifications	“Performance specifications” on page 21
Mounting specifications	“Mounting specifications” on page 22
Computer requirements	“Computer requirements” on page 27
Electrical requirements	“Electrical requirements” on page 25

Computer requirements

Computer requirements

If your organization uses a computer other than one configured by Agilent Technologies, make sure the computer meets the following minimum requirements:

- Computer system
  - Microsoft Windows XP with Service Pack 3,
    Microsoft Windows Vista with Service Pack 2, or
    Microsoft Windows 7
  - 2 GHz or faster 32-bit (x86) processor, multicore preferred
  - 2 GB system memory
  - 40 GB hard drive capacity with 10 GB free space
  - 1280 x 1024 pixel screen resolution
  - Microsoft Internet Explorer 6.0 or Mozilla Firefox 1.0 with JavaScript enabled (required for using the context-sensitive help and knowledge base)
  - A PDF viewer, such as Adobe Reader (required for opening the user guide PDF files)
- Dedicated 10BaseT or faster Ethernet card (two network cards if connecting to your local area network)

Controlling software

VWorks installer 10.0.0.8.21.2009 or later is required.

To facilitate the setup process, a software installation CD is supplied. You can use the CD to install the necessary software and setup configurations.

Related information

For information about...	See...
VWorks software installation instructions	*VWorks Automation Control Setup Guide*
VWorks software	*VWorks Automation Control User Guide*
Robot dimensions	"Physical dimensions" on page 12
Robot reach and workspace	"Reach and workspace" on page 16
Axis and gripper specifications	"Axis and gripper specifications" on page 19
Performance specifications	"Performance specifications" on page 21
Mounting specifications	"Mounting specifications" on page 22

For information about...	See...
Environmental requirements	“Environmental requirements” on page 26
Electrical requirements	“Electrical requirements” on page 25

Agilent Technologies

Site Preparation and Safety Guide

G5430-90001

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