ControlDesk

User Interface Handling

For ControlDesk 7.4

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dSPACE

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How to Contact dSPACE Support

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- For countries not listed, contact dSPACE GmbH in Paderborn, Germany.
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You can also use the support request form: http://www.dspace.com/go/supportrequest. If you are logged on to mydSPACE, you are automatically identified and do not need to add your contact details manually.

If possible, always provide the relevant dSPACE License ID or the serial number of the CmContainer in your support request.

Software Updates and Patches

dSPACE strongly recommends that you download and install the most recent patches for your current dSPACE installation. Visit http://www.dspace.com/go/patches for software updates and patches.

Important Notice

Contents

About This Document

Content

This document introduces you to ControlDesk's user interface handling.

Symbols

dSPACE user documentation uses the following symbols:

Symbol	Description
DANGER	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a hazard that, if not avoided, could result in property damage.
Note	Indicates important information that you should take into account to avoid malfunctions.
Tip	Indicates tips that can make your work easier.
	Indicates a link that refers to a definition in the glossary, which you can find at the end of the document unless stated otherwise.
	Precedes the document title in a link that refers to another document.

Naming conventions

dSPACE user documentation uses the following naming conventions:

%name% Names enclosed in percent signs refer to environment variables for file and path names.

< > Angle brackets contain wildcard characters or placeholders for variable file and path names, etc.

Special folders

Some software products use the following special folders:

Common Program Data folder A standard folder for application-specific configuration data that is used by all users.

`%PROGRAMDATA%\dSPACE\<InstallationGUID>\<ProductName>`

or

`%PROGRAMDATA%\dSPACE\<ProductName>\<VersionNumber>`

Documents folder A standard folder for user-specific documents.

`%USERPROFILE%\Documents\dSPACE\<ProductName>\<VersionNumber>`

Local Program Data folder A standard folder for application-specific configuration data that is used by the current, non-roaming user.

`%USERPROFILE%\AppData\Local\dSPACE\<InstallationGUID>\<ProductName>`

Accessing dSPACE Help and PDF Files

After you install and decrypt dSPACE software, the documentation for the installed products is available in dSPACE Help and as PDF files.

dSPACE Help (local) You can open your local installation of dSPACE Help:

- On its home page via Windows Start Menu
- On specific content using context-sensitive help via **F1**

dSPACE Help (Web) You can access the Web version of dSPACE Help at www.dspace.com/go/help.

To access the Web version, you must have a *mydSPACE* account.

PDF files You can access PDF files via the icon in dSPACE Help. The PDF opens on the first page.

Basics and Instructions

Working with the User Interface of ControlDesk

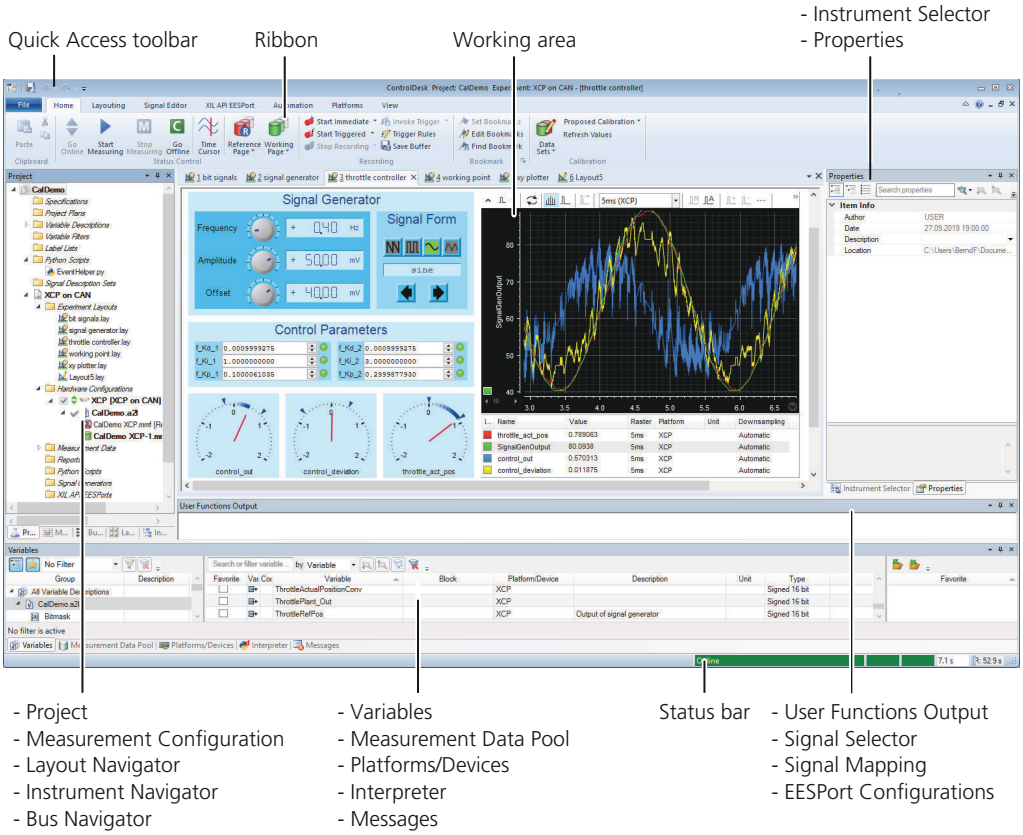
Where to go from here

Information in this section

User Interface of ControlDesk

Overview

The following illustration shows ControlDesk's user interface.



Quick Access toolbar

The Quick Access toolbar is an easy way to call commands. You can customize it to contain the commands you use most frequently.

Ribbon

The ribbon organizes, groups and labels commands of ControlDesk.

Working area

The working area primarily provides access to instruments placed on layouts. Python scripts are also opened in the working area by default. In the workbook mode you can switch between opened layouts and documents via tabs.

Status bar

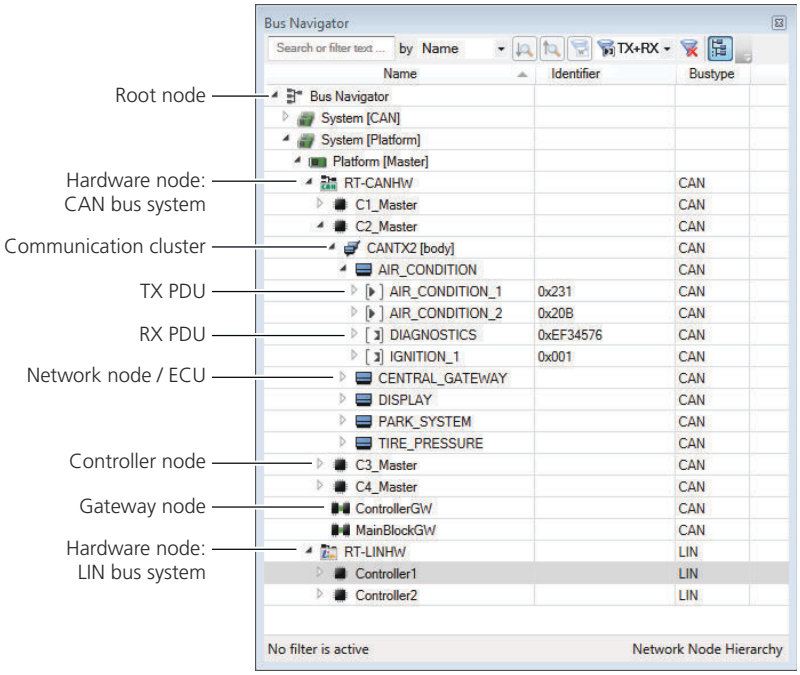
The status bar displays the current state of ControlDesk.

Controlbars

A controlbar is a window or pane outside the working area. It can be docked to an edge of the main window or float in front of it. A controlbar can contain a document, such as a layout.

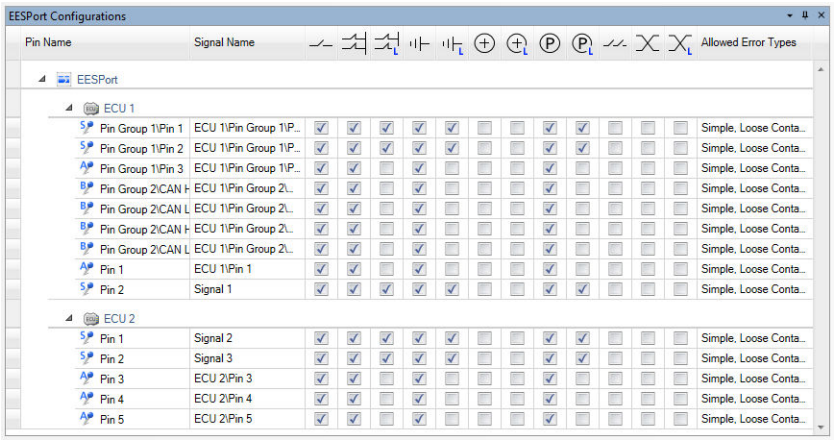
ControlDesk's user interface provides the following controlbars:

Bus Navigator A controlbar for handling bus messages, such as CAN messages, LIN frames, and Ethernet packets.



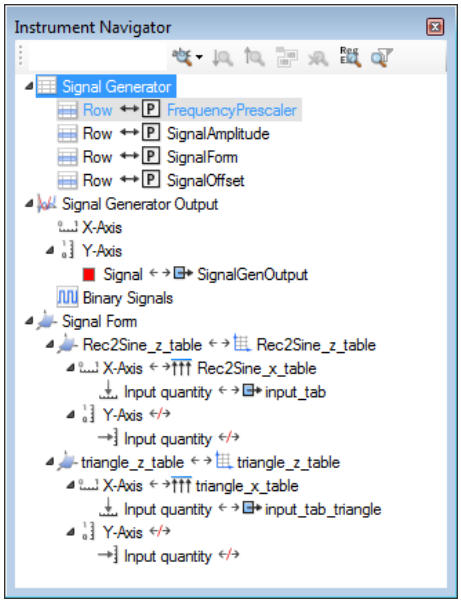
For more information on the controlbar, refer to Bus Navigator (ControlDesk Bus Navigator 🕮).

EESPort Configurations A controlbar for configuring error configurations.



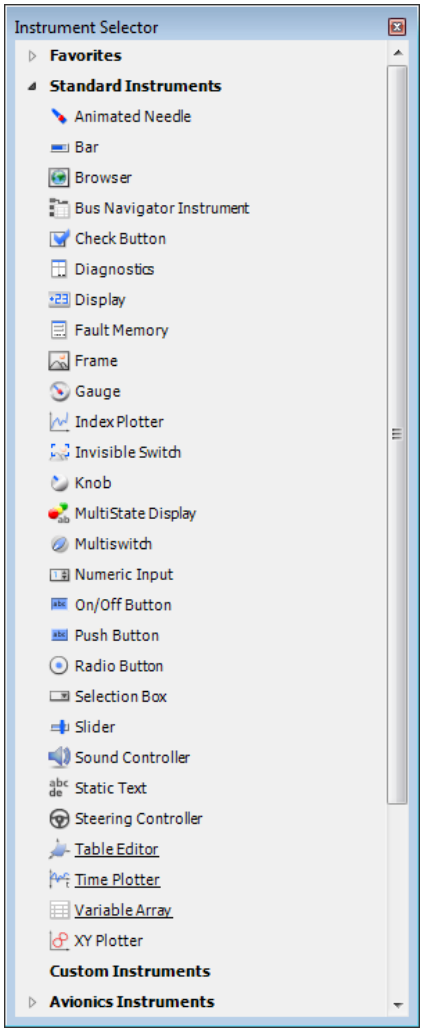
For more information on the controlbar, refer to EESPort Configurations (ControlDesk Electrical Error Simulation via XIL API EESPort 🕮).

Instrument Navigator A controlbar that displays a tree with all the instruments of the active layout and all the variables that are connected to them. The Instrument Navigator's main function is easy selection of instruments in complex layouts.



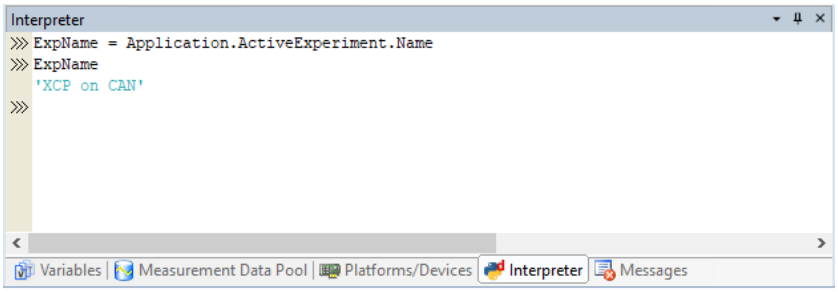
For more information on the controlbar, refer to Instrument Navigator (ControlDesk Layouting 🕮).

Instrument Selector A controlbar that provides access to ControlDesk's instruments. The instruments can be placed on a layout via double-click or drag & drop.



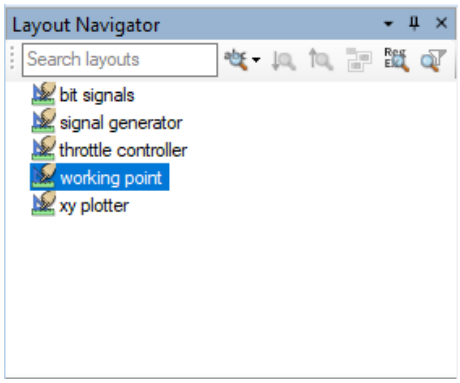
For more information on the controlbar, refer to Instrument Selector (ControlDesk Instrument Handling 🕮).

Interpreter A controlbar that can be used to execute line-based commands. It is used by the Internal Interpreter to print out Python standard error messages and standard output during the execution or import of Python scripts.



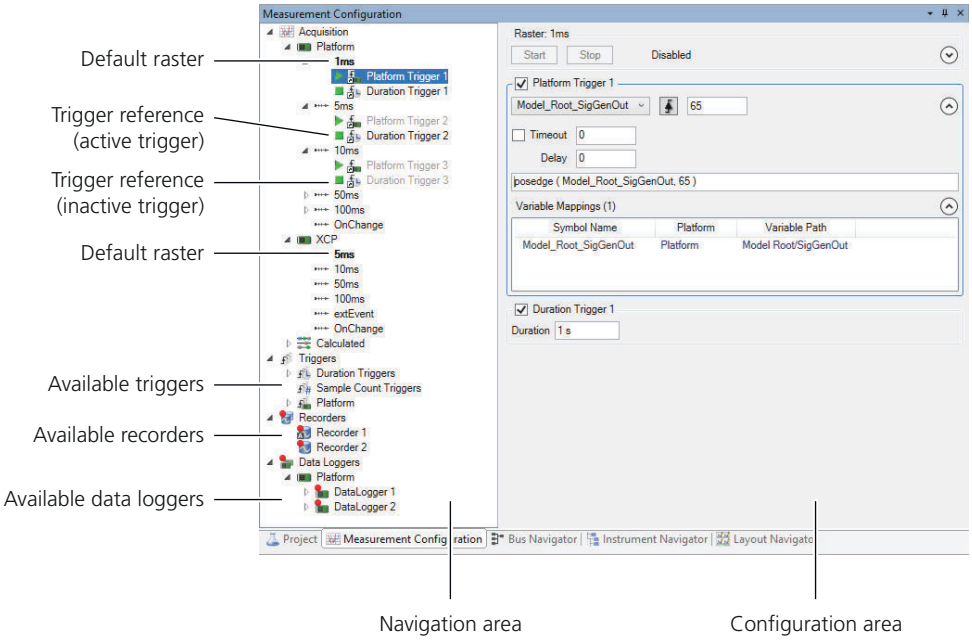
For more information on the controlbar, refer to Interpreter (ControlDesk Automation 🕮).

Layout Navigator A controlbar that displays all opened layouts. It can be used for switching between layouts.



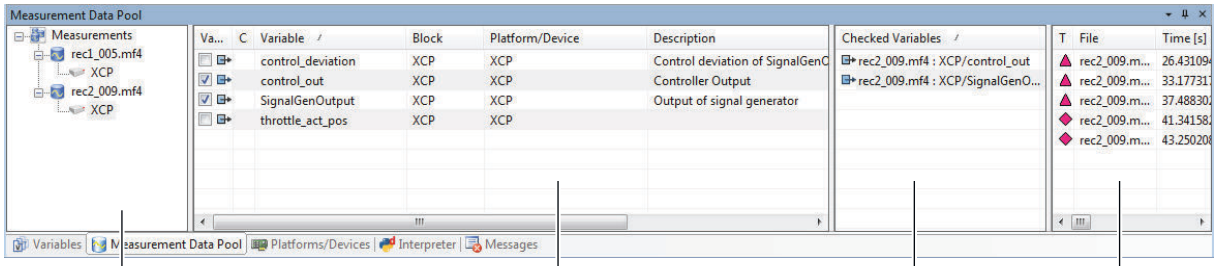
For more information on the controlbar, refer to Layout Navigator (ControlDesk Layouting 🕮).

Measurement Configuration A controlbar that allows you to configure measurement, recording and data logging.



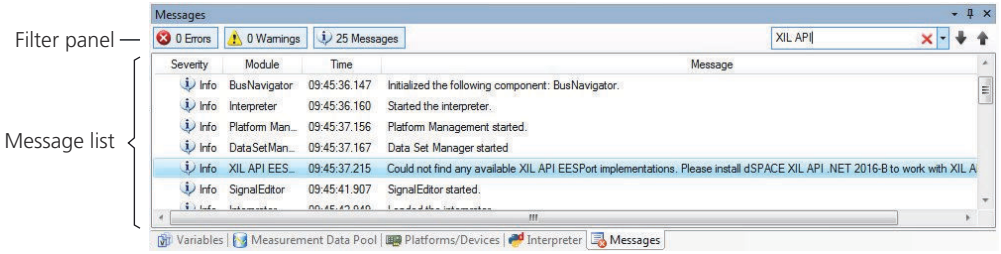
For more information on the controlbar, refer to Measurement Configuration (ControlDesk Measurement and Recording 🕮).

Measurement Data Pool A controlbar that provides access to measurement data recorded in measurement data files.



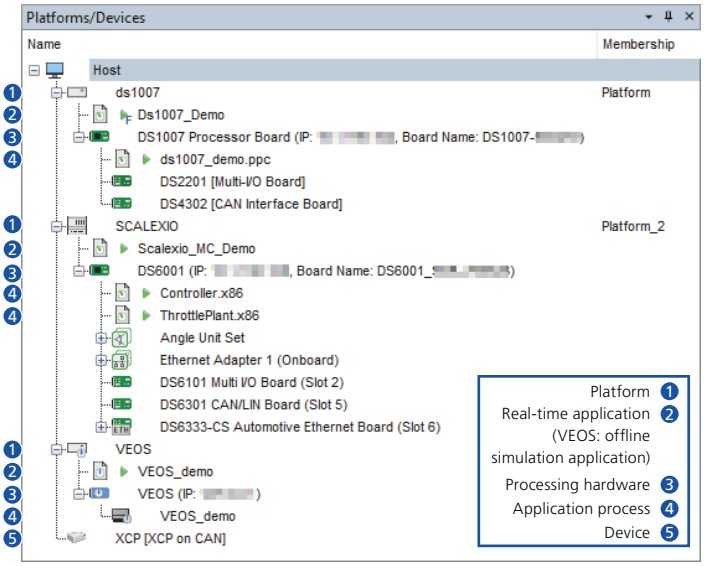
For more information on the controlbar, refer to Measurement Data Pool (ControlDesk Measurement and Recording 🕮).

Messages A controlbar displaying a history of all error and warning messages that occur during work with ControlDesk.



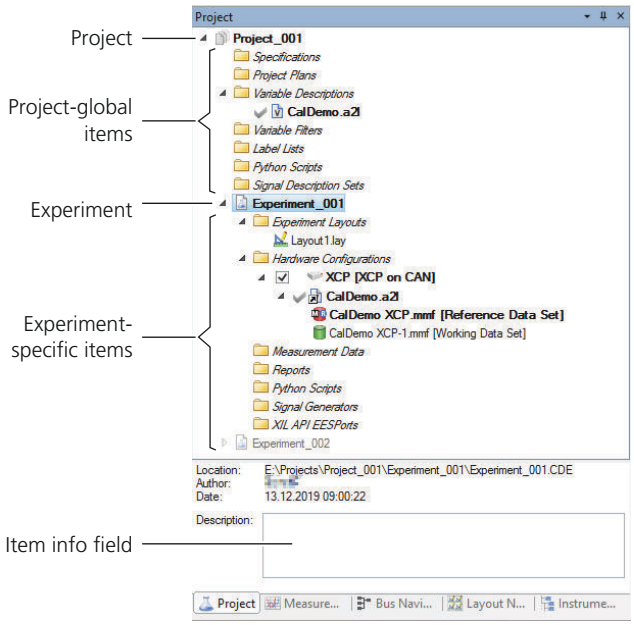
For more information on the controlbar, refer to Messages (ControlDesk Message Handling 🕮).

Platforms/Devices A controlbar that provides functions to handle devices, platforms, and the applications assigned to the platforms.



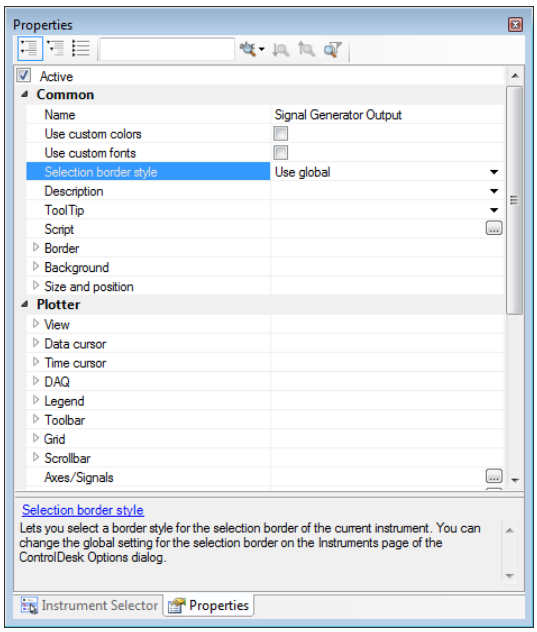
For more information on the controlbar, refer to Platforms/Devices (ControlDesk Platform Management 🕮).

Project A controlbar that provides access to projects and experiments and all the files they contain.



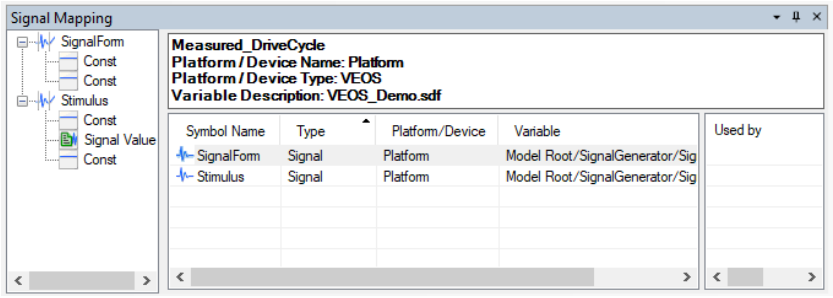
For more information on the controlbar, refer to Project (ControlDesk Project and Experiment Management 🕮).

Properties A controlbar providing access to the properties of, for example, platforms/devices, layouts/instruments, and measurement/recording configurations.



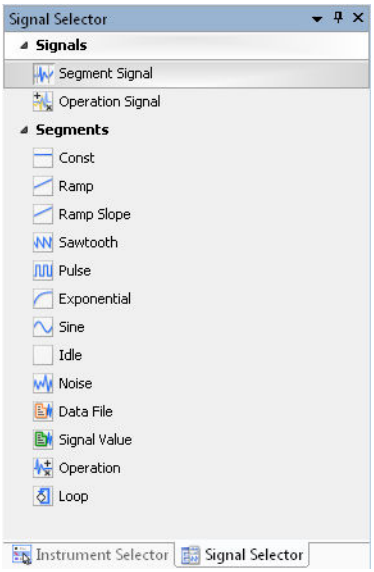
For more information on the controlbar, refer to Properties (Controlbar) on page 50.

Signal Mapping A controlbar of the Signal Editor to map model variables to signals and variable aliases of a signal generator.



For more information on the controlbar, refer to Signal Mapping (ControlDesk Signal Editor 🕮).

Signal Selector A controlbar of the Signal Editor. The Signal Selector provides signals and segments for arranging and configuring signal description sets in the working area.

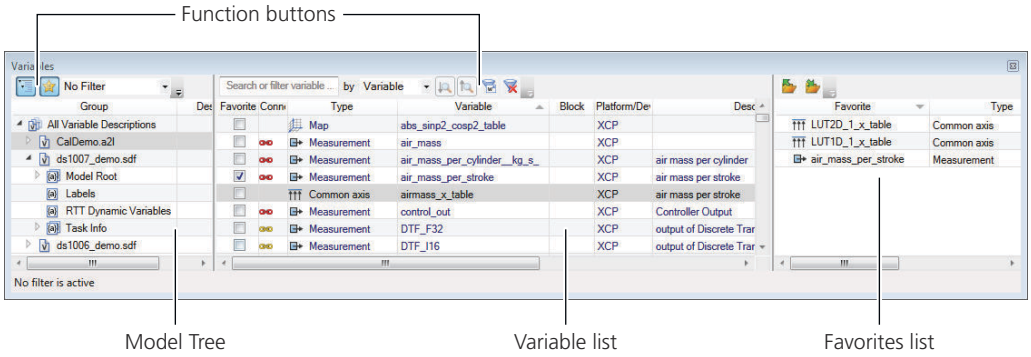


For more information on the controlbar, refer to Signal Selector (ControlDesk Signal Editor 🕮).

User Functions Output A controlbar that provides access to the output of external tools added to the Automation ribbon.

For more information on the controlbar, refer to User Functions Output (ControlDesk Automation 🕮).

Variables A controlbar that provides access to the variables of the currently open experiment.



For more information on the controlbar, refer to Variables (ControlDesk Variable Management 🕮).

Related topics

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References

Bus Navigator (ControlDesk Bus Navigator 🕮)
EESPort Configurations (ControlDesk Electrical Error Simulation via XIL API EESPort 🕮)
Instrument Navigator (ControlDesk Layouting 🕮)
Instrument Selector (ControlDesk Instrument Handling 🕮)
Interpreter (ControlDesk Automation 🕮)
Layout Navigator (ControlDesk Layouting 🕮)
Measurement Configuration (ControlDesk Measurement and Recording 🕮)
Measurement Data Pool (ControlDesk Measurement and Recording 🕮)
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Variables (ControlDesk Variable Management 🕮)

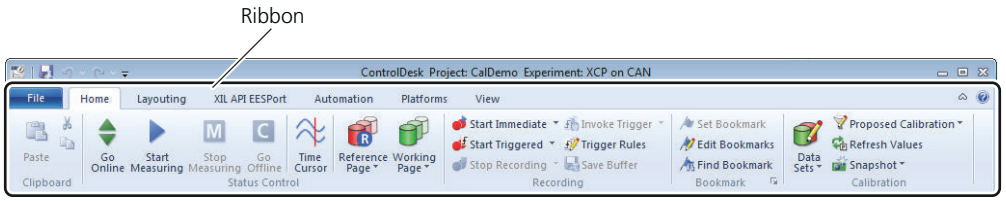
Basics on Ribbons

Introduction

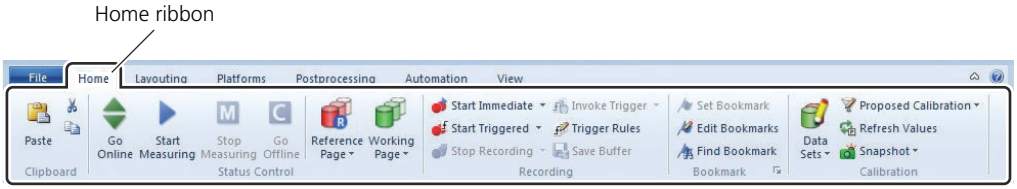
Ribbons are user interface elements that provide access to common commands and dialogs.

Ribbon

The ribbon organizes and groups commands of a program. The ribbon is located at the top of the user interface, see the following example.



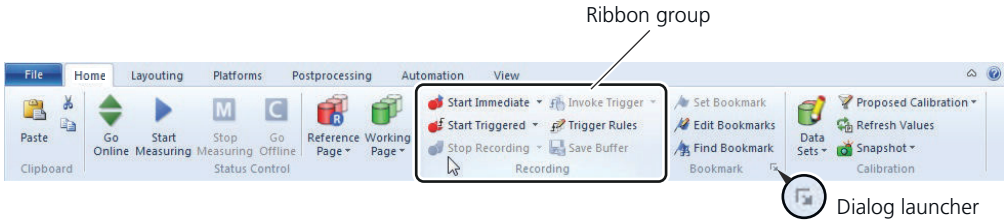
The ribbon consists of several ribbon tabs, see the following example of the Home ribbon.



Ribbon group

A ribbon group is a part of a tabbed ribbon. It consists of a set of related commands.

The following illustration shows a ribbon group in ControlDesk as an example.

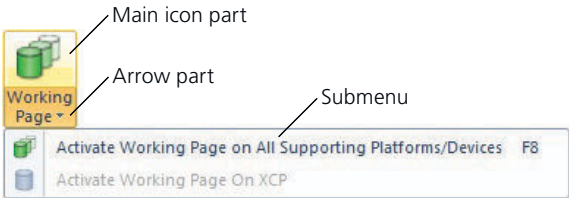


Dialog launcher A dialog launcher is an optional element of a ribbon group that lets you open a dialog related to that ribbon group.

Split button A split button is a special form of a button with two parts. The main icon part of the button executes a default command. The arrow part of the button opens a submenu.

You can identify a split button by moving the mouse over the button. The button then is highlighted, see the following example.

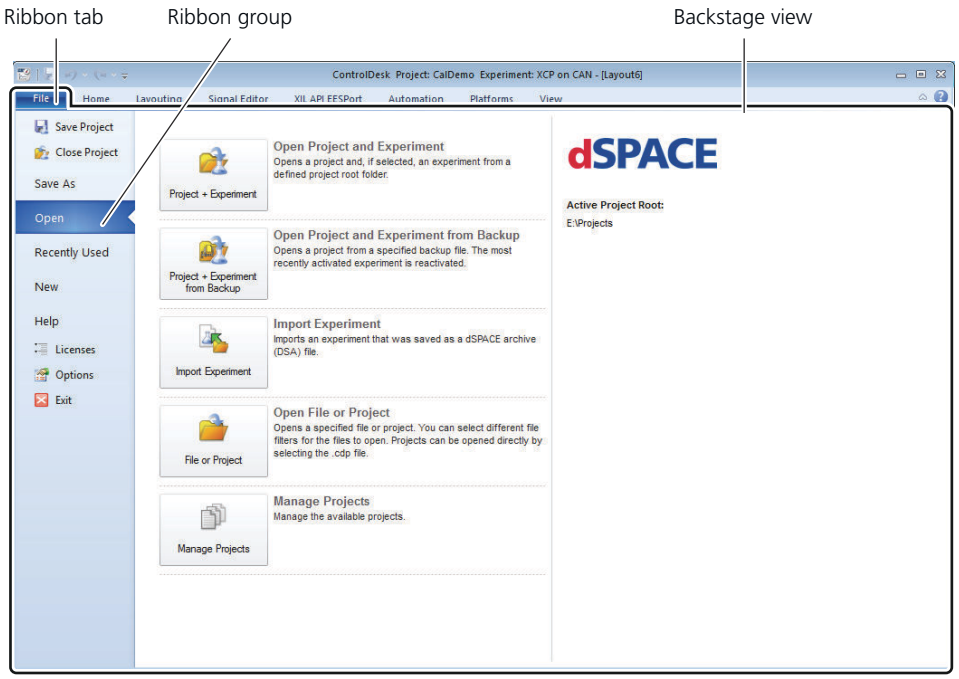
The illustration below shows the Activate Working Page split button of ControlDesk as an example.



Backstage view

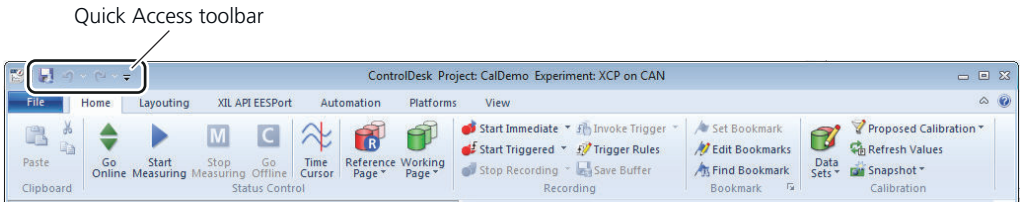
The Backstage view provides basic commands of a software program, such as Save, Open, Close, Exit. The Backstage view can be identified by the colored ribbon tab. When the Backstage view is opened, it covers the entire user interface.

The following illustration shows the Backstage view of ControlDesk as an example.



Quick Access Toolbar

The Quick Access Toolbar is an easy way to call commands. You can customize it to provide the commands you use most frequently.



For information on how to add or remove commands to/from the Quick Access Toolbar, refer to How to Customize the Quick Access Toolbar on page 24.

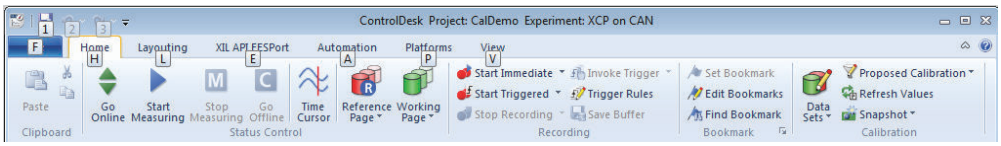
Navigating the ribbon

You can navigate the ribbon via mouse and via keyboard.

Navigation via mouse You can navigate the ribbon with the mouse scroll wheel.

Navigation via keyboard If you want to navigate the ribbon via keyboard, press the **Alt** key. Each command in the Quick Access Toolbar and each ribbon tab then is marked by an access key.

The illustration below shows a ribbon after pressing **Alt** as an example.



If you then press one of the ribbon tab access keys, each command in the selected ribbon is also marked by an access key.

You can remove the access keys by pressing **Alt** again.

Customizing the ribbon

- You can extend the standard ribbon by your own ribbon tabs, ribbon groups and commands.

  Refer to Customize Quick Access Toolbar/Customize Ribbon/Customize View Sets/More Commands on page 35.
- You can also customize ControlDesk's ribbon by adding your own ribbon controls via Python extension scripts.

  For details, refer to Customizing the Ribbon via Extension Scripts (ControlDesk Customization 🕮).

Related topics

Basics

Customizing the Ribbon via Extension Scripts (ControlDesk Customization 🕮)

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How to Customize the Quick Access Toolbar

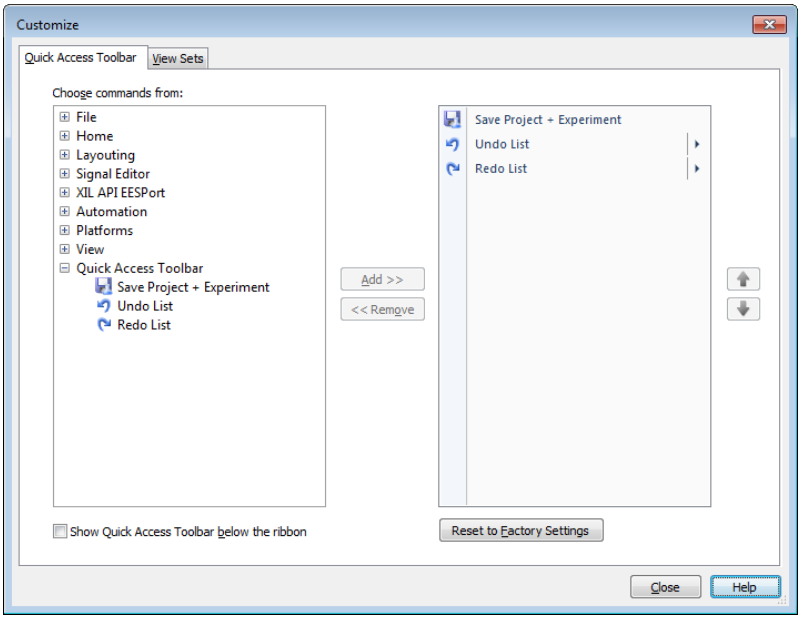
Objective

You can customize the Quick Access Toolbar to display the commands that you use frequently and you can specify its position.

Method

To customize the Quick Access Toolbar

1 On the Quick Access Toolbar, click – More Commands.
The Quick Access Toolbar page of the Customize dialog is displayed.



2 On the Quick Access Toolbar page you can add and remove commands, reset the toolbar and specify the position of the Quick Access Toolbar.
- To add a command to the Quick Access Toolbar, open the Choose commands from list and select a ribbon. Then select a command from the list on the left and click Add.

Tip

To add a command to the Quick Access Toolbar, you can also select **Add to Quick Access Toolbar** in the context menu of a command in a ribbon.

- To remove a command from the Quick Access Toolbar, select the command in the list on the right and click **Remove**.

Tip

To remove a command from the Quick Access Toolbar, you can also select **Remove from Quick Access Toolbar** in the context menu of a command icon in the Quick Access Toolbar.

- To reset the Quick Access Toolbar to the factory default, click **Reset**.
- To show the Quick Access Toolbar below the ribbon, select **Show Quick Access Toolbar below the ribbon**.

3 Click **Close** to save the changes.

Result

You have customized the Quick Access Toolbar.

Related topics

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Customize Quick Access Toolbar/Customize Ribbon/Customize View Sets/More Commands.....35

How to Customize the Screen Arrangement

Objective

The screen arrangement defines which panes are displayed and how they are arranged. The first time you execute the application, it starts with its default screen arrangement, which you can modify.

Screen modifications

The screen arrangement contains information about:

- Display states and positions of the toolbars
- Display states and positions of the panes such as the **Project** controlbar
- Pane settings, such as the docking state

View sets

A view set is a named configuration of the controlbars, the ribbon and the Quick Access Toolbar of the application. You can create various view sets and switch between them. All the modifications you make to the screen arrangement are automatically saved to the currently active view set. For more information on view sets, refer to Customize Quick Access Toolbar/Customize Ribbon/Customize View Sets/More Commands on page 35.

Commands for customizing the screen arrangement

The application provides various commands, such as the Floating command, to modify the state of each pane. You can execute all of these commands quickly and flexibly via mouse. The following instructions describe how to do this.

Method

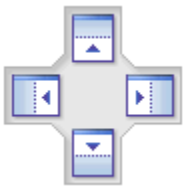
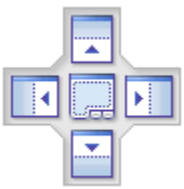
To customize the screen arrangement

1. Move the mouse pointer onto the title bar of the pane whose position you want to change.

   If you want to move a tabbed pane, you must select its tab instead of the title bar.

2. Drag the pane to another position while holding the left mouse button down.

   The docking state of the pane is automatically changed to *floating* and the screen displays *docking stickers* that you can use to specify the new position.

Docking Sticker	Description
	The pane is docked to the top of your application's main window.
	The pane is docked to the bottom of your application's main window.
	The pane is docked to the left of your application's main window.
	The pane is docked to the right of your application's main window.
	The pane is docked to the top, bottom, left, or right of your application's working area.
	The pane is docked above, below, to the left, or to the right of the selected pane. If you drag the mouse onto the middle docking sticker, the pane is docked as a new page.

3. Move the mouse pointer onto a docking sticker. When the area of the new position is displayed, release the left mouse button.

Result

The component is moved to the new position in the user interface and docked to another component.

If you release the mouse button anywhere except on a docking sticker, the docking state of the pane remains floating.

Tip

If you want to change the order of pane tabs, you can drag them to new positions.

Related topics

References

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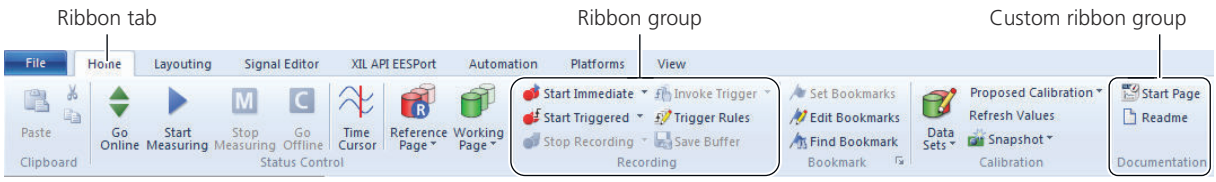
How to Customize the Ribbon

Objective

To adapt the ControlDesk user interface to your requirements, you can add new tabs and groups to the ribbon, and add commands to them.

Customizing ribbons

The ribbon consists of several ribbon tabs that contain ribbon groups with related commands.



ControlDesk lets you customize the ribbon in the following ways:

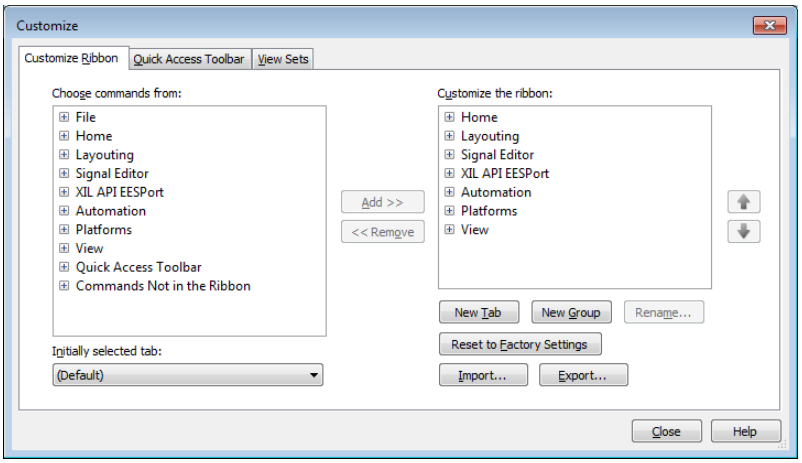
- You can add new ribbon tabs.
- You can add new ribbon groups to existing or new ribbon tabs.
- You can add existing commands to new ribbon groups.

Method

To customize the ribbon

1 Open the context menu of the ribbon and select Customize Ribbon.

The Customize Ribbon page of the Customize dialog is displayed.



Note

You cannot change the factory settings, i.e., you cannot add or remove commands to or from default ribbon groups.

You must add at least one new ribbon group to a new or a default ribbon tab to add a command.

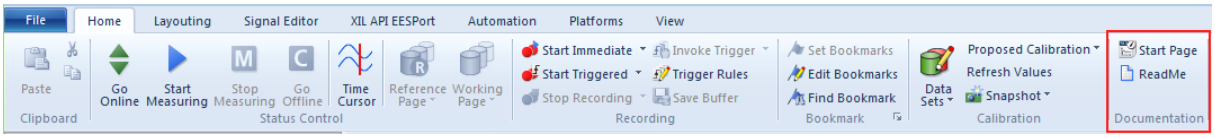
Add and Remove are enabled only if a custom ribbon group is selected.

2 On the Customize Ribbon page, you can customize the content of new ribbon tabs and new ribbon groups.
   - To add a new ribbon tab, click New Tab.
   - To add a new ribbon group, select a new or a default ribbon tab and click New Group.
   - To add a command to a new ribbon group, select the ribbon group in the Customize the ribbon list. Then, select a command from the Choose commands from list and click Add.
   - To remove a command from a custom ribbon group, select the command in the Customize the ribbon list and click Remove.
   - To reset the ribbon to the factory default, click Reset to Factory Settings.
3 Click Close to save the changes.

Result

You customized the ribbon.

The following illustration shows the ControlDesk Home ribbon. The Documentation custom ribbon group was added.



Related topics

References

Customize Quick Access Toolbar/Customize Ribbon/Customize View Sets/More Commands..... 35

Reference Information

Where to go from here

Information in this section

Basic Interface

Introduction

ControlDesk's basic interface provides various commands and dialogs, which are accessible via the ribbon and the context menus of the ControlDesk components.

Where to go from here

Information in this section

Add to Quick Access Toolbar

Access

You can access this command via:

Ribbon	None
Context menu of	Command in a ribbon
Shortcut key	None
Icon	None

Purpose

To add the selected command to the Quick Access Toolbar.

Result

The command is added to the Quick Access Toolbar.

Related topics

HowTos

How to Customize the Quick Access Toolbar..... 24

References

Remove from Quick Access Toolbar..... 54

Copy

Access

You can access this command via:

Ribbon	Home – Clipboard
Context menu of	▪ Interpreter ▪ Python Editor ▪ Layout ▪ Variable list ▪ User Functions Output ▪ dSPACE Log displayed in ControlDesk's working area
Shortcut key	`Ctrl+C`
Icon	

Purpose

To copy the selection to the Clipboard.

Result

The current selection is copied and placed in the Clipboard.

Customize Quick Access Toolbar/Customize Ribbon/Customize View Sets/More Commands

Access

You can access this command via:

Ribbon	View – View Set
Context menu of	▪ Commands in the ribbon ▪ Commands in the Quick Access Toolbar

Shortcut key	None
Icon	None

Purpose

To customize the ribbon, the Quick Access Toolbar, and view sets.

Result

The Quick Access Toolbar and the view sets are customized according to the settings in the Customize dialog.

Description

ControlDesk opens the Customize dialog, which lets you customize the ribbon, the Quick Access Toolbar, and view sets.

Tabbed pages

The Customize dialog consists of the following pages:

Page	Purpose
Customize Ribbon page	To customize the ribbon.
Quick Access Toolbar page	To customize the Quick Access Toolbar.
View Sets page	To create and manage view sets.

Customize Ribbon page

To extend the provided standard ribbon by your own ribbon tabs, ribbon groups, and commands.

Choose commands from Provides a tree of all commands that are available for customization. You can collapse and expand the tree and select a command that you want to add to your customized ribbon.

Customize the ribbon Provides the tree of your currently configured ribbon, its ribbon tabs, ribbon groups, and commands. Using this tree, you can do the following:

- You can collapse and expand the tree.
- You can select where to add a new tree element.
- You can select a tree element to be removed.

Note

You cannot change the factory settings, i.e., you cannot add or remove commands to or from default ribbon groups.
You must add at least one new ribbon group to a new or a default ribbon tab to add a command.
Add and Remove are enabled only if a custom ribbon group is selected.

Add >> Lets you add the command you selected in the tree of available commands to the selected ribbon group in the customized ribbons.

<< Remove Lets you remove the selected tree element from the customized ribbon.

Up Lets you move the selected customized ribbon element toward the top of the tree.

Down Lets you move the selected customized ribbon element toward the bottom of the tree.

New Tab Lets you add a new ribbon tab.

New Group Lets you add a new ribbon group to the selected ribbon tab.

Rename Lets you rename the selected customized ribbon element. Opens the Rename dialog for you to enter a unique name.

Reset to Factory Settings Lets you reset the ribbon to the state of the first installation.

Initially selected tab Lets you specify which ribbon is selected after ControlDesk is started. You can select it from the list of available ribbons and the following key words:

Key Word	Meaning
(Default)	ControlDesk starts with the Home ribbon tab selected.
(Last Used)	ControlDesk starts with the last selected ribbon tab.

Import Lets you import a `RIBCUST` file containing a ribbon customization. Because existing ribbon customizations will be overwritten, you have to confirm this action before the Import Ribbon Customization dialog is opened for you to select a `RIBCUST` file. The configuration of the standard ribbon remains unchanged.

Export Lets you export the settings of the ribbon customization to a `RIBCUST` file.

Quick Access Toolbar page

To customize the Quick Access Toolbar.

Choose commands from Lists all the available ribbons. Lets you select a ribbon to display its commands.

Add >> Lets you add the selected command to the Quick Access Toolbar.

<< Remove Lets you remove the selected command from the Quick Access Toolbar.

Reset to Factory Settings Lets you reset the Quick Access Toolbar to the default.

Show Quick Access Toolbar below the ribbon Lets you specify whether to display the Quick Access Toolbar above or below the ribbon.

Up Lets you move the selected command toward the top of the list to specify the order of commands on the Quick Access Toolbar.

Down Lets you move the selected command toward the bottom of the list to specify the order of commands on the Quick Access Toolbar.

View Sets page

To create and manage view sets.

A view set is a named configuration of the controlbars, the ribbon, and the Quick Access Toolbar of the application. The configuration includes the geometry, visibility, and docking or floating state of these user interface elements. Further user-defined configurations of these elements are also included.

All the modifications you make to the screen arrangement are automatically saved to the currently active view set.

- To discard all the modifications that you made in the screen arrangement, you can reset the active view set to its default state via Reset View Set on page 54.
- You can save the state of the current view set as its default state via Save View Set on page 56.
- If you want to reset all the view set settings to the state of the first installation, you can do so via the **ControlDesk Options** dialog. Refer to Views Page on page 78.

View sets Lists all the available view sets and their icons. The currently active view set is marked by a green check mark.

Symbol	Description
	Currently active view set

New View Set Lets you create a new view set. Opens the **View Set Name** dialog for you to enter a unique name for the new view set. The new view set becomes the currently active view set. It takes the settings of the formerly active view set.

The new view set is added to the **View** ribbon as a list entry below **View Set - Switch View Sets**.

Rename View Set Lets you rename the selected view set. Opens the **View Set Name** dialog for you to enter a unique name.

Delete View Set Lets you delete the selected view set. The last remaining view set cannot be deleted.

Up Lets you move the selected view set toward the top of the list.

Down Lets you move the selected view set toward the bottom of the list.

Load Icon Lets you open a standard dialog to select a BMP or PNG image as the icon representing the view set on toolbars and in menus. The image width and height must not exceed 16 pixels.

Edit Icon Lets you open the Button Editor dialog to create an individual icon representing the currently selected view set on toolbars and in menus.

Reset Icon Lets you clear the user-selected icon and display the standard icon for view sets instead.

Reset to Factory Settings Lets you reset all view set settings to the state of the first installation.

Note

All the user-defined view sets are deleted.

Import Opens the Import View Sets dialog that lets you select a VSET file containing view sets to be imported.

In the dialog, you can specify whether naming conflicts should be resolved:

- By overriding existing view sets, or
- By renaming the imported ones.

Note

To import a view set, the exporting and the importing application must have the same configurations (such as the available licenses).

Export Lets you export all the view sets to a view set (VSET) file. A VSET file also contains the icons assigned to the view sets.

Related topics

HowTos

How to Customize the Quick Access Toolbar..... 24
How to Customize the Ribbon..... 27

Cut

Access

You can access this command via:

Ribbon	Home – Clipboard
Context menu of	▪ Interpreter

	▪ Python Editor ▪ Layout
Shortcut key	`Ctrl+X`
Icon	

Note

Depending on the selection, this command is not available in the operator mode.

Purpose

To cut the current selection to the Clipboard.

Result

The current selection is removed and placed in the Clipboard.

Delete

Access

You can access this command via:

Ribbon	None
Context menu of	None
Shortcut key	`Delete`
Icon	None

Note

Depending on the selection, this command is not available in the operator mode.

Purpose

To delete the current selection.

Result

The current selection is deleted.

dSPACE Help

Access

You can access this command via:

Ribbon	File - Help
Context menu of	None
Shortcut key	**F1**
Icon	
Others	(at the right side of the ribbon bar)

Purpose

To open the user documentation of ControlDesk.

Result

The user documentation of ControlDesk opens.

Related topics

References

Using dSPACE Help.....63

Exit

Access

You can access this command via:

Ribbon	File
Context menu of	None
Shortcut key	**Alt+F4**
Icon	

Purpose

To prompt to save the project and to exit the current ControlDesk session.

Description

If you made any changes to any open files in ControlDesk, you are prompted to save them before the session is quit.

Help (Backstage View)

Access

You can access this ribbon group via:

Ribbon	File
Context menu of	None
Shortcut key	None
Icon	None

Purpose

To provide access to help commands.

Description

You have access to commands such as:

- dSPACE Help on page 41
- Using dSPACE Help on page 63
- New Features and Migration on page 45
- PDF Files on page 49
- Keyboard Help on page 42

The Help backstage view also displays information on the software version and the dSPACE Release it is assigned to.

Disclaimer Opens the Disclaimer dialog containing general warnings concerning the usage of the software. By default, the Disclaimer dialog is displayed during the start of the software. To avoid this, you can clear the Always show this warning during start-up option.

Related topics

Basics

Basics on Ribbons.....21

Keyboard Help

Access

You can access this command via:

Ribbon	File – Help
Context menu of	None
Shortcut key	Ctrl+F1
Icon	

Purpose	To display the currently active shortcut keys.
Result	ControlDesk opens the **Active Keyboard Shortcuts** dialog that lists the currently active shortcut keys.
Active Keyboard Shortcuts dialog	Displays a context-dependent list of shortcut keys. They depend on your current working context in ControlDesk. For example, the list is different if you currently work on a ControlDesk layout or in ControlDesk's **Project** controlbar. The shortcut keys displayed in the dialog depend on how the dialog is opened: ▪ Access via the **Help** ribbon If you access the list via the **Help** ribbon, ControlDesk displays a list with the shortcut keys that are globally available. They are always available, that is, independent of your current working context in ControlDesk. ▪ Access via **Ctrl+F1** If you access the list via **Ctrl+F1**, ControlDesk displays a context-dependent list of shortcut keys. They depend on your current working context in ControlDesk. **Copy List** Lets you copy the list of keyboard shortcuts to the Clipboard. You can paste them, for example, to a text document and print them.

Licenses

Access	You can access this command via: Ribbon: **File** Context menu of: None Shortcut key: None Icon: 
Purpose	To display information on the licenses that are relevant to the current ControlDesk session.
Result	ControlDesk opens the **Licenses** dialog.
Licenses dialog	The dialog displays information on the licenses that are relevant to the current ControlDesk session. To refresh the license information, you have to reopen the **Licenses** dialog.

The following table explains the license states:

License State	Description
Accessible	The license is available for use by ControlDesk.
Not Accessible	The license is not available for use by ControlDesk.
Used	The license is used by ControlDesk. A license used by ControlDesk remains in the **Used** state until you close ControlDesk.

Related topics

Basics

ControlDesk Versions and Modules (ControlDesk Introduction and Overview 🕮)

HowTos

How to Identify Accessible Licenses (ControlDesk Introduction and Overview 🕮)

Minimize the Ribbon

Access

You can access this command via:

Ribbon	None
Context menu of	▪ Commands in the ribbon ▪ Commands in the Quick Access Toolbar
Shortcut key	None
Icon	(on the right of the ribbon)  or 

Purpose

To toggle between a minimized and expanded ribbon.

Result

If the ribbon is minimized, only the ribbon tabs are shown on the user interface.

Description

To access a command when the ribbon is minimized, click a ribbon tab. The commands remain on the user interface until you execute a command from the ribbon.

New Features and Migration

Access

You can access this command via:

Ribbon	File – Help
Context menu of	None
Shortcut key	None
Icon	

Purpose

To display new features and required migration steps for all the products in the current dSPACE Release.

Result

dSPACE Help opens with New Features and Migration 🕮 displayed. Navigate to the specific product information to read about the new features of a specific product. If there are migration steps required, the necessary steps are described.

Open File or Project

Access

You can access this command via:

Ribbon	File – Open
Context menu of	None
Shortcut key	`Ctrl+O`
Icon	

Purpose

To open a Python script in the Python Editor, or to open a ControlDesk project (CDP) file.

Description

If you open a project file, no experiment is active. You have to activate one in the opened project manually.

The path to the opened project file is not added to the list of project root directories.

Operator Mode Page

Access

This page is part of the ControlDesk Options dialog.

The dialog can be opened via the Options Command on page 47.

Purpose

To switch ControlDesk from the normal mode to the operator mode and vice versa.

Description

You can switch ControlDesk to the *operator mode* to protect existing experiments against unintentional changes.

Dialog settings

Activate operator mode on next tool start Lets you specify whether ControlDesk will be in operator mode or in normal mode the next time you start ControlDesk.

Enter password (optional) (available only if ControlDesk currently is in normal mode) Lets you specify a password.

If you specify a password, a user who wants to switch ControlDesk from the operator mode back to the normal mode will have to enter this password.

Tip

Specifying a password is recommended if not every employee is allowed to switch ControlDesk from the operator mode to the normal mode.

Reenter password (available only if ControlDesk currently is in normal mode) Reenter the password specified in the Enter password (optional) edit field.

Enter password to unlock (available only if ControlDesk currently is in operator mode and if a password was specified before ControlDesk was switched to the operator mode) Lets you enter the password to unlock the Activate operator mode on next tool start checkbox. Ask your administrator for the password.

Note

If the password is lost, contact dSPACE Support: http://www.dspace.com/go/supportrequest.

Related topics

Basics

Basics on the Operator Version and Operator Mode (ControlDesk Introduction and Overview 🕮)
ControlDesk Versions and Modules (ControlDesk Introduction and Overview 🕮)
Operator Mode Functionalities (ControlDesk Introduction and Overview 🕮)

HowTos

How to Switch ControlDesk to the Operator Mode (ControlDesk Introduction and Overview 🕮)

References

Options Command.....47

Options Command

Access

You can access this command via:

Ribbon	File
Context menu of	None
Shortcut key	None
Icon	

Purpose

To configure the global settings of ControlDesk.

Result

Opens the **ControlDesk Options** dialog. If you change a setting in any of the pages in the **ControlDesk Options** dialog, it applies to the current and all subsequent ControlDesk sessions.

ControlDesk Options dialog

The dialog provides the following pages:

- Bus Navigator Page (ControlDesk Bus Navigator 🕮)
- Data Acquisition Page (ControlDesk Measurement and Recording 🕮)
- Data Set Management Page (ControlDesk Calibration and Data Set Management 🕮)
- Diagnostics Management Page (ControlDesk ECU Diagnostics 🕮)
- Display Format Page (ControlDesk Instrument Handling 🕮)
- Editor General Page (ControlDesk Automation 🕮)
- Instruments Page (ControlDesk Instrument Handling 🕮)

- Interpreter Page (ControlDesk Automation 🕮)
- MC3 Page (ControlDesk MCD-3 Automation 🕮)
- Measurement Configuration Page (ControlDesk Measurement and Recording 🕮)
- Operator Mode Page on page 46
- Platform Management Page (ControlDesk Platform Management 🕮)
- Project Page (ControlDesk Project and Experiment Management 🕮)
- Signal Editor Page (ControlDesk Signal Editor 🕮)
- Syntax Highlighting Page (ControlDesk Automation 🕮)
- User Settings Page on page 62
- Variable Abbreviation Rules Page (ControlDesk Instrument Handling 🕮)
- Variables Page (ControlDesk Variable Management 🕮)
- Views Page on page 78
- Visualization Page (ControlDesk Layouting 🕮)

Related topics

References

Bus Navigator Page (ControlDesk Bus Navigator 🕮)
Data Acquisition Page (ControlDesk Measurement and Recording 🕮)
Data Set Management Page (ControlDesk Calibration and Data Set Management 🕮)
Diagnostics Management Page (ControlDesk ECU Diagnostics 🕮)
Display Format Page (ControlDesk Instrument Handling 🕮)
Editor General Page (ControlDesk Automation 🕮)
Instruments Page (ControlDesk Instrument Handling 🕮)
Interpreter Page (ControlDesk Automation 🕮)
MC3 Page (ControlDesk MCD-3 Automation 🕮)
Measurement Configuration Page (ControlDesk Measurement and Recording 🕮)
Operator Mode Page.....46
Platform Management Page (ControlDesk Platform Management 🕮)
Project Page (ControlDesk Project and Experiment Management 🕮)
Signal Editor Page (ControlDesk Signal Editor 🕮)
Syntax Highlighting Page (ControlDesk Automation 🕮)
User Settings Page.....62
Variable Abbreviation Rules Page (ControlDesk Instrument Handling 🕮)
Variables Page (ControlDesk Variable Management 🕮)
Views Page.....78
Visualization Page (ControlDesk Layouting 🕮)

Paste

Access

You can access this command via:

Ribbon	Home – Clipboard
Context menu of	▪ Interpreter

	▪ Python Editor ▪ Layout
Shortcut key	`Ctrl+V`
Icon	

Note

Depending on the selection, this command is not available in the operator mode.

Purpose

To paste the Clipboard content into the current window.

Result

If the Clipboard contents are valid for the current window, they are pasted.

PDF Files

Access

You can access this command via:

Ribbon	File – Help
Context menu of	None
Shortcut key	None
Icon	

Purpose

To open a folder containing documentation PDF files of the current dSPACE Release.

Print

Access

You can access this command via:

Ribbon	None
Context menu of	Workbook tab
Shortcut key	None
Icon	

Purpose

To print the active Python script.

Result

This invokes standard printing. The specified file is printed according to your specifications.

Related topics

References

Basic Interface 32

Properties (Controlbar)

Access

You can access this command via:

Ribbon	View – Controlbar - Switch Controlbars
Context menu of	▪ Working area: instruments, layouts, and tabs ▪ Instrument Navigator controlbar – instrument node ▪ Measurement Configuration controlbar – items in the navigation area ▪ Measurement Data Pool controlbar - measurement data file ▪ Project controlbar – various items, e.g., layout, instrument, variable description, application, measurement data file ▪ Platforms/Devices controlbar – platform, application ▪ Signal Editor – signal, segment
Shortcut key	**Alt+Enter** (on a layout or instrument)
Icon	

Purpose

To view and edit the properties of the selected element.

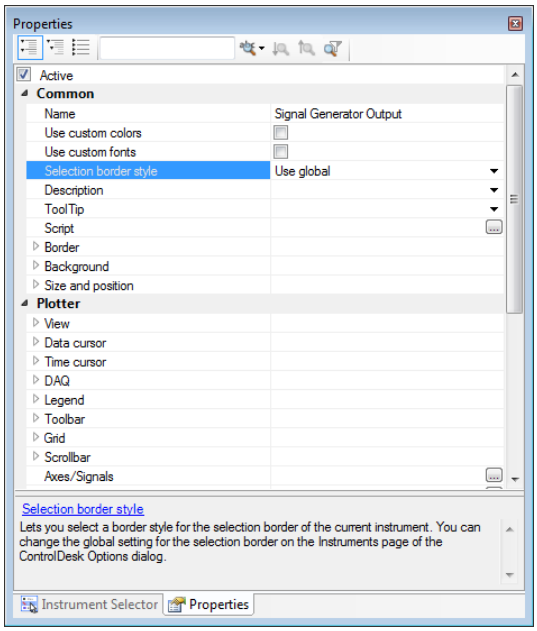
Result

Opens the Properties controlbar and displays the properties of the selected item.

Description

Properties controlbar A controlbar that gives access to the properties of the selected item, for example, an instrument, a layout, or a device.

The Properties controlbar looks like this:



Toolbar buttons The Properties controlbar provides the following buttons in the toolbar:

Button	View
	All categories are expanded (showing the first-level properties). All categories and all properties are expanded. All categories are collapsed.
Search by name	Lets you search for property names. Enter the search string in the edit field and click or to find the previous or the next matching item. To change the search scope, click .
Search by value	Lets you search for property values. Enter the search string in the edit field and click or to find the previous or the next matching item. To change the search scope, click .
Search by name and value	Lets you search for property names and values. Enter the search string in the edit field and click or to find the previous or the next matching item. To change the search scope, click .
Search for colors	Lets you search for color properties. You can limit the search scope by entering a search string for the

Button	View
	property name in the edit field. Click  or  to find the previous or the next matching item. To change the search scope, click ▾.
 Search for fonts	Lets you search for font properties. You can limit the search scope by entering a search string for the property name in the edit field. Click  or  to find the previous or the next matching item. To change the search scope, click ▾.
	Lets you jump to the next occurrence of the search string.
	Lets you jump to the previous occurrence of the search string.
	Lets you filter the properties list by the search results. All the matching items including their parent objects are displayed.

Related topics

HowTos

How to Configure the Properties of Instruments (ControlDesk Instrument Handling 🕮)

References

Configure Platform/Device (ControlDesk Platform Management 🕮)
Instrument-Related Properties (ControlDesk Instrument Handling 🕮)
Layout Properties (ControlDesk Layouting 🕮)
Measurement/Recording-Related Properties (ControlDesk Measurement and Recording 🕮)
Platform/Device-Related Properties (ControlDesk Platform Management 🕮)
Signal Editor Properties (ControlDesk Signal Editor 🕮)

Readme

Access

You can access this command via:

Ribbon	View – Show
Context menu of	None
Shortcut key	None
Icon	

Purpose To display last-minute information of the product.

Result The Readme dialog opens.

Description The Readme dialog displays the contents of the product's `Readme.txt` file.

Click OK to close this dialog.

Redo / Redo List

Access You can access this command via:

Ribbon	None
Context menu of	▪ Interpreter ▪ Python Editor
Shortcut key	`Ctrl+Y`
Icon	
Others	Quick Access toolbar

Note

Depending on the selection, this command is not available in the operator mode.

Purpose To redo the most recent commands or actions.

Result Any command or action that was undone via the Undo command is performed once again.

Description If you carry the command out once, one command or action is redone; if you carry it out twice, two are redone, and so on.

Tip

You can click the down arrow to get a list of the actions that can be redone. If you select one of the actions from the list, all actions up to that are redone.

Related topics

References

Undo / Undo List 61

Remove from Quick Access Toolbar

Access

You can access this command via:

Ribbon	None
Context menu of	Quick Access Toolbar command
Shortcut key	None
Icon	None

Purpose

To remove the selected command from the Quick Access Toolbar.

Result

The command is removed from the Quick Access Toolbar.

Related topics

References

Add to Quick Access Toolbar 34

Reset View Set

Access

You can access this command via:

Ribbon	View – View Set
Context menu of	None
Shortcut key	None
Icon	

Purpose

To reset the currently active view set to its default state.

Description

When you save a view set via **Save View Set**, the current state of the view set is saved as the new default state.

You can reset all the view set settings to the state of the first installation via the Views Page on page 78.

Related topics

References

Save / Save Layout

Access

This command is available only if you have changed the content of a Python script or a layout. You can access this command via:

Ribbon	▪ Automation – Python Scripts – Script File ▪ Layouting – Layouts
Context menu of	Project controlbar – Layout
Shortcut key	**Ctrl+S**
Icon	None

Note

This command is not available in the operator mode if you use it for a script that is part of a project or experiment.

Purpose

To save a Python script or a layout.

Result

ControlDesk saves the Python script or layout. If the file has not been saved before (or if it is read-only), ControlDesk opens a standard dialog to save the file.

Save As

Access

This command is available only if you have opened a Python script. You can access this command via:

Ribbon	Automation – Python Scripts – Script File
Context menu of	None
Shortcut key	None
Icon	None

Purpose

To save a file under a new name.

Result

Opens a standard dialog to save the file under a new name.

Save View Set

Access

You can access this command via:

Ribbon	View – View Set
Context menu of	None
Shortcut key	None
Icon	

Purpose

To save the current settings of the active view set.

Description

The current state of the view set is saved as the new default state. The next time you use **Reset View Set** the view set is reset to the default state.

You can reset all the view set settings to the state of the first installation via the Views Page on page 78.

Related topics

HowTos

How to Customize the Screen Arrangement....25

References

Customize Quick Access Toolbar/Customize Ribbon/Customize View Sets/More Commands....35
Reset View Set....54
View Sets - View Set 1...n....64

Select All

Access

You can access this command via:

Ribbon	Automation – Edit Script – Advanced
Context menu of	▪ Interpreter ▪ Python Editor ▪ User functions output
Shortcut key	`Ctrl+A`
Icon	None

Purpose

To select all the entries in the user functions output, the Interpreter, or the Python Editor.

Show Quick Access Toolbar Above / Below the Ribbon

Access

You can access this command via:

Ribbon	None
Context menu of	▪ Commands in the ribbon ▪ Commands in the Quick Access Toolbar
Shortcut key	None
Icon	None

Purpose

To show the Quick Access Toolbar above or below the ribbon.

Result

The Quick Access Toolbar is shown above or below the ribbon.

Related topics

Basics

Basics on Ribbons....21

Sort Ascending

Access

You can access this command via:

Ribbon	None
Context menu of	Measurement Data Pool (column header of the variable list)
Shortcut key	None
Icon	None

Purpose

To sort rows alphabetically in ascending order by the selected column.

Related topics

References

Sort Descending....58

Sort Descending

Access

You can access this command via:

Ribbon	None
Context menu of	Measurement Data Pool (column header of the variable list)
Shortcut key	None
Icon	None

Purpose

To sort rows alphabetically in descending order by the selected column.

Related topics

References

Sort Ascending..... 58

Start Page

Access

You can access this command via:

Ribbon	View – Show
Context menu of	None
Shortcut key	None
Icon	

Purpose

To display the Start page.

Result

The Start page is displayed in the working area.

Start Page

The Start page allows you, for example, to open an existing project or create a new one. The Start page also provides quick access to the product documentation.

New Project + Experiment / New Experiment Lets you define a new project or a new experiment.

For details, refer to New Project and Experiment / New Experiment (ControlDesk Project and Experiment Management 🕮).

Open Project + Experiment Lets you open an existing experiment.

For details, refer to Open Project + Experiment (ControlDesk Project and Experiment Management 🕮).

Open File or Project To open a Python script in the Python Editor, or to open a ControlDesk project (CDP) file.

For details, refer to Open File or Project on page 45.

Recent Lets you open one of the most recent experiments that were open.

Reset Sort Direction (Available from the context menu of the column header of the list of experiments) You can click the column headers to sort the experiments in ascending or descending order according to a column. To remove this sorting you can reset the sort direction to its default, which is according to

the time the experiments were last opened, starting with the most recently opened experiment.

Close page after project has loaded Lets you specify whether to close the Start page after project load.

Show page on startup Lets you specify whether to display the Start page on program start.

Basic Practices / Advanced Practices / New Features and Migration Lets you display the ControlDesk documentation.

Status Bar

Access

You can access this command via:

Ribbon	View - Show
Context menu of	None
Shortcut key	None
Icon	☑ (Checkbox)

Purpose

To show or hide ControlDesk's status bar at the bottom of ControlDesk's user interface.

Result

The checkbox next to the command in the View ribbon indicates whether the status bar is shown or not.

Description

The status bar visualizes the current status of ControlDesk. The following status are possible:

Status	Visualization
Offline	
Online	
Measuring	 During measuring the increasing measuring time and the remaining time until the measurement buffer overflows are shown.
Immediate Recording	 During immediate recording the increasing recording time, the increasing measuring time and the remaining time until the measurement buffer overflows are shown.

Status	Visualization
Triggered Recording	 When waiting for a trigger, the increasing measuring time and the remaining time until the measurement buffer overflows are shown.  When the start conditions are reached, ControlDesk starts recording. Then the increasing recording time, the time remaining before the time limit (if defined), the increasing measuring time and the remaining time until the measurement buffer overflows are shown.

Related topics

Basics

User Interface of ControlDesk 11

Undo / Undo List

Access

You can access this command via:

Ribbon	None
Context menu of	▪ Interpreter ▪ Python Editor
Shortcut key	`Ctrl+Z`
Icon	
Others	Quick Access toolbar

Note

Depending on the selection, this command is not available in the operator mode.

Purpose

To undo the most recent edit commands or actions.

Result

The previously performed commands and actions are undone.

Description

This lets you undo the most recent edit commands or actions performed in the Internal Interpreter or Python Editor, or on a layout. If you carry the command out once, one command or action is undone; if you carry it out twice, two are undone, and so on.

Tip

You can click the down arrow to get a list of the actions that can be undone. If you select one of the actions from the list, all actions up to that are undone.

Related topics

References

Redo / Redo List 53

User Settings Page

Access

This page is part of the ControlDesk Options dialog.

The dialog can be opened via the Options Command on page 47.

Purpose

To export, import, or reset user specific settings.

Description

ControlDesk stores all the information that has to be saved for the next session as environment settings in a UCD file. This information is read out when ControlDesk is started again and ensures that user-specific settings, for example, a dialog window in a different position, can be restored. In particular, all the settings in the ControlDesk Options dialog are restored this way.

The Import and Export Settings dialog allows you to save the current state of the environment settings manually, for example in the following use cases:

- You are experimenting with different settings and want to save a favorite one.
- You want to transfer the environment settings to a ControlDesk installation on another PC. In this case the PCs must be as similar as possible. For example, screen solutions must not differ.

You can also reset the environment settings to the state of the first installation.

Dialog settings

Export settings Lets you save the current environment settings. Specify the export file in the Name and path of the settings file text box.

Import settings Lets you restore exported environment settings. Specify the import file in the Name and path of the settings file text box.

Note

You must restart ControlDesk to let the environment settings take effect. All the changes made to ControlDesk settings between closing the Import and Export Settings dialog and restarting ControlDesk will get lost.

Reset all settings Lets you reset the environment settings to the state of the first installation. You must restart ControlDesk to let the initial environment settings take effect.

Note

If you reset the environment settings, all the user-specific settings, even all the defined users themselves, get lost.

Name and path of the settings file Lets you specify the path and name of the export or import file. Click the Browse button to browse through the file system.

Related topics

References

Options Command.....47

Using dSPACE Help

Access

You can access this command via:

Ribbon	File – Help
Context menu of	None
Shortcut key	**F1**
Icon	

Purpose

To get information on working with dSPACE Help.

Result

dSPACE Help opens. It provides information on general handling and instructions on using dSPACE Help.

View Sets - View Set 1...n

Access

You can access the view set under the name you assigned via:

Ribbon	View – View Sets – Switch View Sets
Context menu of	None
Shortcut key	None
Icon	  , ...

Purpose

To select a view set.

Result

The selected view set is activated.

Description

The defined view sets are available via **View - View Sets**. The first nine view sets are also available via the **Switch View Sets** ribbon.

View sets 1 … 3 provide preconfigured screen arrangements.

Related topics

References

Customize Quick Access Toolbar/Customize Ribbon/Customize View Sets/More Commands..... 35

Window Handling

Introduction

ControlDesk's window handling provides various commands and dialogs, which are accessible via the ribbon and the context menus of the ControlDesk components.

Where to go from here

Information in this section

Allow Docking

Access

You can access this command via:

Ribbon	None
Context menu of	All controlbars
Shortcut key	None
Icon	None

Purpose

To allow the component to be docked.

Result

When moved within ControlDesk's main window, the component is docked if ControlDesk finds a suitable place for it.

Description

When docked, the component has no window frame but an information header for controlling its state, position, and size.

Related topics

References

Float in Main Window....71

Arrange Icons

Access

You can access this command via:

Ribbon	View – Window
Context menu of	None
Shortcut key	None
Icon	

Purpose

To arrange all minimized windows in ControlDesk's working area.

Result

All minimized windows are arranged horizontally at the bottom of ControlDesk's working area.

Related topics

References

Auto Hide

Access

You can access this command via:

Menu bar	None
Context menu of	Pane's title bar in docked mode
Shortcut key	None
Icon	None
Others	 in the window's title bar

Purpose

To hide the window automatically if it is not focused.

Description

The Auto Hide command is enabled only for windows in docked mode. If you enable the Auto Hide feature, a tab representing the window is created in the user interface. You can click the tab to display the window again. The position of

the tab depends on the original position of the window you want to hide. The Auto Hide symbol in the title bar changes to  .

The transition between displayed and hidden window is animated if the **Animate auto hiding of controlbars** option is set. Refer to Views Page on page 78.

Cascade

Access

You can access this command via:

Ribbon	View – Window
Context menu of	None
Shortcut key	None
Icon	

Purpose

To cascade all currently open windows in ControlDesk's working area.

Result

The windows are cascaded.

Description

The windows are cascaded diagonally, one on top of the other. You can move them and pull them to any size you desire.

Related topics

References

Arrange Icons....67
Tile Horizontally....76
Tile Vertically....77

Close All

Access

You can access this command via:

Ribbon	View – Window
Context menu of	None
Shortcut key	None

Icon	

Purpose

To close all windows in ControlDesk's working area.

Description

If you made changes in any of the layouts, you are prompted to save each layout before it is closed. If you click **Yes**, the layouts are saved and closed. If you click **No**, they are closed without being saved. If you click **Cancel**, only unchanged layouts are closed.

Related topics

References

Close All But This....69

Close All But This

Access

You can access this command via:

Ribbon	None
Context menu of	Workbook tab in workbook mode
Shortcut key	None
Icon	None

Purpose

To close all the windows except for the currently active one.

Result

All the windows other than the active one are closed.

Related topics

References

Close All....68
Close Window....70

Close Window

Access

You can access this command via:

Ribbon	View – Window
Context menu of	Tab of windows selected in the working area
Shortcut key	`Ctrl+F4`
Icon	

Purpose

To close the currently selected window in ControlDesk's working area.

Description

If the window contains a layout and you made changes to it, you are prompted to save the layout before it is closed. If you click Yes, the layout is saved and closed. If you click No, it is closed without being saved. If you click Cancel, the layout stays open.

Dock/Docked

Access

You can access this command via:

Ribbon	View – Window
Context menu of	▪ Window's title bar in floating mode ▪ Workbook tab in workbook mode
Shortcut key	None
Icon	

Purpose

To place a floating pane at a certain location in the user interface and connect it to its neighbor windows.

Description

The Dock command on the View ribbon is only available for a component that is floating in the main window. If you dock the component, it is moved to a standard location in the user interface and docked to its neighbor windows.

The Docked command from the title bar's context menu is available for a component that is in floating state.

If you drag a window and drop it on the selected positioning symbol, it is automatically docked.

Note

- Before you can dock a window, you must select the **Allow Docking** option to enable docking at all.
- This command is only available for windows that support docking.
- You cannot dock a window in **full screen mode**.
- When you dock a window containing a document such as a layout, a Python script, or a signal description, then close and reopen the project and experiment, the window is not docked. Instead, it is switched to the floating state within the main window.

Float in Main Window

Access

You can access this command via:

Ribbon	None
Context menu of	All controlbars
Shortcut key	None
Icon	None

Purpose

To move the controlbar to the main window.

Result

The controlbar is moved to the main window.

Related topics

References

Allow Docking..... 66

Float/Floating

Access

You can access this command via:

Ribbon	**View – Window**
Context menu of	▪ Window's title bar in docked mode

	▪ Workbook tab in workbook mode
Shortcut key	None
Icon	

Purpose

To make a window movable on the entire screen.

Description

The **Float** command in the **Window** menu is only available for a component that is floating in the main window. If you float the component, the window type changes, and you can drag it to any place on your screen, even outside of the ControlDesk user interface. The window is not docked to other windows.

The **Floating** command from the title bar's context menu is available for a component that is in docked state.

If you drag a docked window but do not drop it on a positioning symbol, it is automatically in floating state.

Note

- This command is available only for windows that support floating.
- The **Float in Main Window** command makes a window floating, but you can move it only within the main window.
- When you float a window containing a document such as a layout, a Python script, or a signal description, then close and reopen the project and experiment, the window is not automatically opened and displayed. You have to open it manually.
- You cannot float a window in **full screen mode**.

Full Screen Mode

Access

You can access this command via:

Ribbon	**View** – **Show**
Context menu of	None
Shortcut key	**Alt+Shift+Enter**
Icon	

Purpose

To toggle between full screen and normal view.

Description

In full screen mode, the **Full Screen** toolbar is hidden at the top of the screen.

Note

Docked and floating windows are not visible in full screen mode.

To return to the normal view, move the mouse pointer to the top center of the screen and click  , or press **Alt** + **Shift** + **Enter**.

Minimize Window

Access

You can access this command via:

Ribbon	None
Context menu of	None
Shortcut key	None
Icon	 (button in the ribbon header)

Purpose

To minimize the window currently selected in the working area.

Result

The window currently selected in the working area is minimized.

More Windows

Access

You can access this command via:

Ribbon	**View** – **Window**
Context menu of	None
Shortcut key	None
Icon	

Purpose

To arrange windows in ControlDesk's working area as you require them.

Result

Windows are arranged in ControlDesk's working area according to your settings.

Description

The Arrange Windows dialog opens for you to arrange all the windows available in ControlDesk's working area.

Select Window Lets you select the windows whose settings you want to change.

Activate Lets you activate the selected window.

OK Lets you close the dialog.

Save Lets you save a modified layout or script file that is currently open in the working area.

Close Window Lets you close the selected window.

Cascade Lets you cascade the selected windows in ControlDesk's working area.

Tile Horizontally Lets you arrange the selected windows in ControlDesk's working area horizontally.

Tile Vertically Lets you arrange the selected windows in ControlDesk's working area vertically.

Minimize Lets you minimize the selected windows.

Restore Window

Access

You can access this command via:

Ribbon	None
Context menu of	None
Shortcut key	None
Icon	(button in the ribbon header)

Purpose

To restore the window currently selected in the working area.

Result

The window currently selected in the working area is restored.

Switch Controlbars

Access

You can access this command via:

Ribbon	View – Controlbar
Context menu of	None
Shortcut key	None
Icon	None

Purpose

To show or hide ControlDesk's controlbars.

Result

ControlDesk's controlbars are either shown or hidden.

Description

Opens a submenu showing the following controlbars available in ControlDesk:

- Bus Navigator
- EESPort Configurations
- Instrument Navigator
- Instrument Selector
- Interpreter
- Layout Navigator
- Messages
- Measurement Configuration
- Measurement Data Pool
- Platforms/Devices
- Project
- Properties (Controlbar)
- Signal Selector
- Signal Mapping
- User Functions Output
- Variables

To hide a controlbar, you must use the Close symbol in the controlbar's header.

Related topics

References

Bus Navigator (ControlDesk Bus Navigator 🕮)
EESPort Configurations (ControlDesk Electrical Error Simulation via XIL API
EESPort 🕮)
Instrument Navigator (ControlDesk Layouting 🕮)
Instrument Selector (ControlDesk Instrument Handling 🕮)
Interpreter (ControlDesk Automation 🕮)
Layout Navigator (ControlDesk Layouting 🕮)
Measurement Configuration (ControlDesk Measurement and Recording 🕮)
Measurement Data Pool (ControlDesk Measurement and Recording 🕮)
Messages (ControlDesk Message Handling 🕮)
Platforms/Devices (ControlDesk Platform Management 🕮)
Project (ControlDesk Project and Experiment Management 🕮)
Properties (Controlbar)..... 50
Signal Mapping (ControlDesk Signal Editor 🕮)
Signal Selector (ControlDesk Signal Editor 🕮)
User Functions Output (ControlDesk Automation 🕮)
Variables (ControlDesk Variable Management 🕮)

Switch Windows

Access

You can access this command via:

Ribbon	View – Window
Context menu of	None
Shortcut key	None
Icon	

Purpose

To activate another open window.

Result

The selected window is opened in the working area.

Tile Horizontally

Access

You can access this command via:

Ribbon	View – Window
Context menu of	None

Shortcut key	None
Icon	

Purpose

To arrange the currently open windows in ControlDesk horizontally.

Result

The windows are arranged horizontally.

Description

The windows are arranged so that each window has the same size, initially without overlaps. You can move the child windows, pull them to any size you desire, and overlap them.

Related topics

References

Arrange Icons....67
Cascade....68
Tile Vertically....77
Workbook Mode....79

Tile Vertically

Access

You can access this command via:

Ribbon	View – Window
Context menu of	None
Shortcut key	None
Icon	

Purpose

To arrange the currently open windows in ControlDesk vertically.

Result

The windows are arranged vertically.

Description

The windows are arranged so that each window has the same size, initially without overlaps. You can move the child windows, pull them to any size you desire, and overlap them.

Related topics

References

Views Page

Access

This page is part of the ControlDesk Options dialog.

The dialog can be opened via the Options Command on page 47.

Purpose

To alter the settings for workbook tabs and controlbar tabs and to reset the view sets.

Dialog settings

Workbook tabs position If you have opened several sequences and other windows, you have a better overview of them when you use the workbook mode. In this mode, each opened sequence and other windows are represented by a tab. With this setting, you can specify whether the tabs are displayed at the *top* or the *bottom* of the working area.

Controlbar tabs layout You can customize the window layout of ControlDesk. If you have docked several components to a window, it provides tabs to switch between them. With this setting, you can specify the layout of the controlbar tabs:

Layout	Description
Auto-size	Each controlbar tab contains the symbol and the name of the component that it represents. The whole component name is displayed. If the window is too small for displaying all controlbar tabs, you must scroll to the hidden ones.
Compressed	Only the active controlbar tab contains the symbol and name of the component that it represents. The other controlbar tabs are displayed only by their symbols.

Layout	Description
Size to Fit	Each controlbar tab contains the symbol and the name of the component that it represents. However, the component names are shortened so that all controlbar tabs are accessible without scrolling.

Show shortcut keys in tooltips If you select this option, the tooltip of a selected command contains information on its shortcut key, if available.

Animate auto hiding of controlbars If you select this option, auto hiding of a window is done with an animation.

Drag controlbars to float Lets you specify whether a docked controlbar can be changed to the floating state by dragging the controlbar's title bar.

Reset all View Sets Lets you reset all view set settings to the state of the first installation.

Note

All the user-defined view sets are deleted.

Related topics

References

Auto Hide....67
Options Command....47
Workbook Mode....79

Workbook Mode

Access

You can access this command via:

Ribbon	View – Show
Context menu of	None
Shortcut key	None
Icon	☑ (Checkbox)

Purpose

To enable or disable the Workbook mode for ControlDesk's working area.

Result

If there is a checkmark to the left, the Workbook mode is enabled in ControlDesk's working area.

Description

In the Workbook mode, each separate window in the working area can be activated by a tab at the bottom or the top of the working area. The position of the workbook tabs can be specified in the **ControlDesk Options** dialog, refer to Views Page on page 78. You can sort the tabs by dragging a tab to the desired position. A tab provides a specific context menu.

If there is no checkmark, the Workbook mode is deactivated.

Related topics

References

File Formats

File Types

Overview

⚠ WARNING

- Do not modify any of these files manually.
- Do not change file name extensions. This may lead to conflicts later on because ControlDesk uses fixed file name extensions for file types.

When you work with ControlDesk, you will encounter the following file types:

Extension	Description
A2L	An ASAM MCD-2 MC (A2L) file – formerly known as an ASAP2 file – lists the variables and parameters of an application for an electronic control unit (ECU).
AML	An ASAP2 Meta Language (AML) file specifies the format of the ASAP 1b interface-specific parameters.
ASC	File format for logging data of a CAN or LIN bus configuration, used for LOG files created with CANalyzer (Vector Informatik GmbH).
CDE	ControlDesk experiment files contain links to all documents related to an experiment.
CDFX	The Calibration Data Format is an ASAM standard file format based on XML. It allows the interchange of data between different calibration, simulation, and data acquisition tools. In ControlDesk, you can export data sets into the CDFX file format in 2 versions: ▪ ASAM Calibration Data Format V2.0 ▪ ASAM Calibration Data Format V2.1 You can can specify the file format version to be used on the **Data Set Management page** of the **ControlDesk Options** dialog. CDFX files can be stored with the CDFX or XML extension.
CDP	ControlDesk project files contain links to all experiments and documents related to a project.
CLASS	File format for diagnostic jobs. Diagnostic jobs (often called Java jobs) are programmed sequences, that are usually built of a sequence of diagnostic services.
CSV	CSV files have the comma-separated values format. In ControlDesk, you can export: ▪ MF4 files containing recorded data ▪ Table data containing the data of multidimensional calibration parameters to the CSV file format for further processing with Microsoft Excel®, for example. Bus Navigator LOG files can be saved in CSV format.
CON	ControlDesk 3.x file format for data connections between instruments and variables. ControlDesk can import connection files in CON file format.
CONX	ControlDesk file format for exporting/importing data connections between instruments and variables. ControlDesk can export and import connection files as XML files in CONX file format.
CSET	The Column Set (CSET) file is a ControlDesk specific file format for column sets used for monitoring lists in the Bus Navigator. A CSET file contains one or more column sets.
DBC	A CAN database (DBC) file lists the variables of a CAN device. The DBC file format was designed by Vector Informatik GmbH for CANalyzer database files.

Extension	Description
DFP	dSPACE flash project files contain all the configuration settings of a flash project of the dSPACE ECU Flash Programming Tool.
EFS	An Ethernet Filter Set (EFS) file is a ControlDesk specific file format for user-defined Ethernet filters. An EFS file contains one or more Ethernet filters.
GPX	A GPS Exchange (GPX) file is an XML file that contains geodata, such as waypoints, routes, or tracks. In ControlDesk, you can import GPX files to visualize GNSS positioning data in a Map instrument.
HEX	Intel file format for ECU Image files. An ECU Image file usually contains the code of an ECU application and the data of the parameters within the application.
ILX	The ILX file format is a ControlDesk specific file format for instrument libraries. In ControlDesk's **Instrument Selector**, you can use ILX files to export and import instruments.
LAX	A LAX file contains a layout for measuring variables and calibrating parameters.
LDF	A LIN Description File (LDF) describes a LIN bus topology (LIN Cluster) and contains signals, data packages (frames) and their time sequence.
MAT	MATLAB® binary file format. In ControlDesk, you can export: ▪ MF4 files containing recorded data ▪ Table data containing the data of multidimensional calibration parameters to the MAT file format for further processing with MATLAB. For details on the structure of MAT files generated by exporting recorded data, refer to Structure of MAT Files Generated by Exporting Recorded Data (ControlDesk Measurement and Recording 🕮).
MDF	File format for binary files containing measurement data in MDF format version 2.0 or 3.0.
MF4	File format for binary files containing measurement data in ASAM MDF format version 4.x. MDF 4.x is ControlDesk's standard file format for measurement data files. ControlDesk includes *reduction data* when measurement data is saved/exported to the ASAM MDF 4.x file format. MF4 files can be exported to the MAT and CSV file formats.
MMF	ControlDesk internal file format for data sets. An MMF file contains a memory image and needs a variable description to be interpreted. In ControlDesk, MMF files are used for offline and online calibration. MMF files can be used for creating ECU image files.
MOT	Motorola file format for ECU Image files. An ECU Image file usually contains the code of an ECU application and the data of the parameters within the application.
ODX	File format for all the files containing ODX data. More restrictive, the files can have the following extensions: ▪ ODX-D: File format for specifications of diagnostic services and diagnostic jobs (DIAG-LAYER-CONTAINER) ▪ ODX-C: File format for communication parameter specifications (COMPARAM-SPEC) ▪ ODX-V: File format for vehicle information specifications (VEHICLE-INFO-SPEC) ▪ ODX-M: File format for specifications of multiple-ECU jobs (MULTIPLE-ECU-JOB-SPEC) ▪ ODX-F: File format for ECU flash programming specifications (FLASH) ECU diagnostics with ControlDesk are completely based on Open Diagnostic Data Exchange (ODX). ControlDesk supports V2.0.1 and V2.2.0 (ISO 22901-1) of the ASAM MCD-2 D (ODX) standard.
PCAPNG	PCAPNG is a widely used file format for storing captured network packet traces. A PCAPNG file contains several blocks that contain different types of information. The blocks can be used to rebuild captured packets. ControlDesk uses the PCAPNG file format for Ethernet LOG files.
PDX	File container for ODX data (also called PDX package). All the files to be exchanged are packaged in one file container. The content of the container is described in a container catalog (PDX package catalog), which is also stored in the PDX package. Besides the ODX data, a PDX package can contain files of any format.
PY	Python script file.
PYC	Compiled Python script file.
S19	Motorola file format for ECU Image files. An ECU Image file usually contains the code of an ECU application and the data of the parameters within the application.

Extension	Description
SDF	For platforms, the variable description specifies the application and the contained parameters and measurement variables. The variable description is stored as a system description (SDF) file. System description files are created automatically by Real-Time Interface (RTI).
SREC	Motorola file format for ECU Image files. An ECU Image file usually contains the code of an ECU application and the data of the parameters within the application.
VFE	A variable filter expression (VFE) file contains the filter configuration of a combined combined filter, which is used to filter a variable list using a combination of filter conditions.
VXF	A dSPACE-specific file format that lets you do the following: ▪ Exchange calculated variables together with the assigned mathematical formulas. ▪ Exchange mathematical formulas.
XML	XML – Extensible Markup Language file – file format used for platform/device configuration files, for example.
XEVT	ControlDesk file format for exporting and importing event handlers of static events.
ZIP	ControlDesk uses the ZIP archive file format to back up projects.

Automation

Where to go from here

Information in this section

Programming ControlDesk Automation

Where to go from here

Information in this section

Automating User Interface Handling.....86
You can customize ControlDesk's user interface to make your daily work more efficient.

Information in other sections

Tool Automation Demos (ControlDesk Automation 🕮)
Demonstrate how to automate ControlDesk and use ControlDesk events.

Automating User Interface Handling

Introduction

You can customize ControlDesk's user interface to make your daily work more efficient.

The program listings below consist of excerpts from the `UserInterfaceHandling.py` demo script. Keep in mind that these excerpts are not runnable by themselves.

Changing properties of the ControlDesk main window

The following listing shows how to change the position, size, and state of the ControlDesk main window. Some property changes, such as changing the window position and size, are only visible if the ControlDesk window is not maximized.

Note

Some property changes, such as changing the window position of a maximized main window, can lead to parts of the user interface be hidden. If you lower the position of a maximized window, for example, the bottom of the window is no longer visible on the screen.

```
# Import from the demo utilities demo functions.
# These are described in the DemoUtilities library.
from DemoUtilities import Wait
# Variable: The time for a pause in s.
WAITINGTIME = 1.5
class MainDemoController(object):
    (...)
    def Initialize(self):
        (...)
        # Get the enums object.
        self.Enums = Enums(self.ControlDeskApplication)
        # Get the main window object.
        self.MainWindow = self.ControlDeskApplication.MainWindow
        (...)
        # Restore ControlDesk window.
        self.MainWindow.State = self.Enums.MainWindowState.Restored
        (...)
    def ChangeWindowPositionAndSize(self):
        # Change window position (+100).
        self.MainWindow.Top += 100
        # Change window size (-100).
        self.MainWindow.Width -= 100
        self.MainWindow.Height -= 100
        (...)
    def SwitchStates(self):
        # Wait WAITINGTIME.
        Wait(WAITINGTIME)
        # Maximize window.
        self.MainWindow.State = self.Enums.MainWindowState.Maximized
        # Wait WAITINGTIME.
        Wait(WAITINGTIME)
        # Restore window.
        self.MainWindow.State = self.Enums.MainWindowState.Restored
```

Tip

If you hide ControlDesk's main window via its **Visible** property, a ControlDesk icon is placed in the notification area of the taskbar. The main window can be displayed again by selecting **Activate** from the icon's context menu.

Adding an interpreter window and changing its state

The following listing shows how to add a new interpreter window and then make it a floating window.

```
# Import: from the demo utilities demo functions.
# These are described in the DemoUtilities library.
from DemoUtilities import Wait
# Variable: The time for a pause in s.
WAITINGTIME = 1.5
class MainDemoController(object):
    (...)
    def AddInterpreterWindow(self):
        (...)
        # Create document to show the effect.
        self.ControlDeskApplication.Interpreter.Documents.New()
        (...)
    def ChangeWindowState(self):
        if self.ControlDeskApplication.MainWindow.Windows.Contains("Script1"):
            # Get the interpreter window with name 'Script1'.
            InterpreterWindow = self.ControlDeskApplication.MainWindow.Windows.Item("Script1")
        else:
            # If the subwindow was not found, get the first subwindow.
            InterpreterWindow = self.ControlDeskApplication.MainWindow.Windows.Item(0)
        # Check if the InterpreterWindow object is not None
        if InterpreterWindow:
            # Wait sleep time.
            Wait(WAITINGTIME)
            # Maximize interpreter window.
            InterpreterWindow.State = WindowState.Maximized
```

Related topics

Basics

Tool Automation Demos (ControlDesk Automation 🕮)
User Interface of ControlDesk 11

User Interface Handling

User Interface-Related Interfaces

Introduction

You can customize ControlDesk's user interface to make your daily work more efficient.

Description

The MainWindow object implements the *IXaMainWindow* interface. You can use it to access the window properties.

Related interfaces

Interface	Description
IXaApplication (refer to Application / IXaApplication <<Interface>> (ControlDesk Automation 🕮))	This interface is used to access the ControlDesk application object.
IXaMainWindow (refer to MainWindow / IXaMainWindow <<Interface>> (ControlDesk Automation 🕮))	This interface is to access the applications main window.
MainWindowState (refer to MainWindowState <<Enumeration>> (ControlDesk Automation 🕮))	States of the application's main window.
IXaWindows (refer to Windows / IXaWindows <<Collection>> (ControlDesk Automation 🕮))	This interface is to access the child windows of the application.
IXaWindow (refer to Window / IXaWindow <<Interface>> (ControlDesk Automation 🕮))	This interface is to access a child window of the application.
IVsViewSets (refer to ViewSets / IVsViewSets <<Collection>> (ControlDesk Automation 🕮))	This interface is to access the view sets.
IVsViewSet (refer to ViewSet / IVsViewSet <<Interface>> (ControlDesk Automation 🕮))	This interface is to access a view set.

Related documentation

Topic	Description
Automating User Interface Handling on page 86	You can customize ControlDesk's user interface to make your daily work more efficient.

Troubleshooting

Problem When Starting ControlDesk in a Specific Working Mode

Problem

ControlDesk provides two working modes:

- Normal mode providing the entire ControlDesk functionality
- Operator mode providing only a subset of the ControlDesk functionality

If you start ControlDesk in operator mode while it is already running in normal mode, the running ControlDesk instance is activated *but not switched to operator mode*.

Solution

To start ControlDesk in a specific mode, perform the following steps:

1. Close ControlDesk.
2. Switch the working mode as described in How to Switch ControlDesk to the Operator Mode (ControlDesk Introduction and Overview 🕮).
3. Restart ControlDesk.

Related topics

Basics

Basics on the Operator Version and Operator Mode (ControlDesk Introduction and Overview 🕮)

Limitations

Limitations for Handling the User Interface

Introduction	There is a limitation for handling the user interface in ControlDesk.
Starting ControlDesk 4.x/5.x when ControlDesk 6.0 or later is already running	Starting ControlDesk 4.x or 5.x is not blocked when ControlDesk 6.0 or later is already running. For this reason, you have to make sure that ControlDesk 6.0 or later is not running when you want to start ControlDesk 4.x or 5.x.

Glossary

Introduction

Briefly explains the most important expressions and naming conventions used in the ControlDesk documentation.

Where to go from here

Information in this section

Numerics

3-D Viewer An instrument for displaying items in a 3-D environment.

A

A2L file A file that contains all the relevant information on measurement and calibration variables in an ECU application and the ECU's communication interface(s). This includes information on the variables' memory addresses and conversion methods, the memory layout and data structures in the ECU as well as interface description data (IF_DATA).

Acquisition An object in the Measurement Configuration controlbar that specifies the variables to be measured and their measurement configuration.

Active variable description The variable description that is currently active for a platform/device. Multiple variable descriptions can be assigned to one platform/device, but only one of them can be active at a time.

Additional write variable A scalar parameter or writable measurement variable that can be connected to an instrument in addition to the main variable. When the value of the main variable changes, the changed value is also applied to all the additional write variables connected to the instrument.

Airspeed Indicator An instrument for displaying the airspeed of a simulated aircraft.

Altimeter An instrument for displaying the altitude of a simulated aircraft.

Animated Needle An instrument for displaying the value of a connected variable by a needle deflection.

Application image An image file that contains all the files that are created when the user builds a real-time application. It particularly includes the variable

description (SDF) file. To extend a real-time application, ControlDesk lets the user create an updated application image from a data set. The updated application image then contains a real-time application with an additional set of parameter values.

Artificial Horizon An instrument displaying the rotation on both the lateral and the longitudinal axis to indicate the angle of pitch and roll of a simulated aircraft. The Artificial Horizon has a pitch scale and a roll scale.

Automatic Reconnect Feature for automatically reconnecting to platform/device hardware, for example, when the ignition is turned off and on, or when the physical connection between the ControlDesk PC and the ECU is temporarily interrupted.

If the feature is enabled for a platform/device and if the platform/device is in the 'unplugged' state, ControlDesk tries to re-establish the logical connection to the platform/device hardware. After the logical connection is re-established, the platform/device has the same state as before the unplugged state was detected. A measurement started before the unplugged state was detected is resumed.

Automation A communication mechanism that can be used by various programming languages. A client can use it to control a server by calling methods and properties of the server's automation interface.

Automation script A script that uses automation to control an automation server.

Axis point object Common axis

B

Bar An instrument (or a value cell type of the Variable Array) for displaying a numerical value as a bar deflection on a horizontal or vertical scale.

Bitfield A value cell type of the Variable Array for displaying and editing the source value of a parameter as a bit string.

Bookmark A marker for a certain event during a measurement or recording.

Browser An instrument for displaying HTML and TXT files. It also supports Microsoft Internet Explorer© plug-ins that are installed on your system.

Bus communication replay A feature of the Bus Navigator that lets you replay logged bus communication data from a log file. You can add replay nodes

to the Bus Navigator tree for this purpose. You can specify filters to replay selected parts of the logged bus communication.

Bus configuration A configuration of all the controllers, communication matrices, and messages/frames/PDUs of a specific communication bus such as CAN. ControlDesk lets you display and experiment with bus configurations in the Bus Navigator.

Bus connection A mode for connecting dSPACE real-time hardware to the host PC via bus. The list below shows the possible bus connections:

- dSPACE real-time hardware installed directly in the host PC
- dSPACE real-time hardware installed in an expansion box connected to the host PC via dSPACE link board

Bus Instrument An instrument available for the Bus Navigator. It can be configured for different purposes, for example, to display information on received messages (RX messages) or to manipulate and transmit messages (TX messages). The instrument is tailor-made and displays only the message- and signal-specific settings which are enabled for display and/or manipulation by ControlDesk during run time.

Bus logging A feature of the Bus Navigator that lets you log raw bus communication data. You can add logger nodes on different hierarchy levels of the Bus Navigator tree for this purpose. You can specify filters to log filtered bus communication. The logged bus communication can be replayed.

Bus monitoring A feature of the Bus Navigator that lets you observe bus communication. You can open monitoring lists and add monitor nodes on different hierarchy levels of the Bus Navigator tree for this purpose. You can specify filters to monitor filtered bus communication.

Bus Navigator A controlbar for handling bus messages, such as CAN messages, LIN frames, and Ethernet packets.

Bus statistics A feature of the Bus Navigator that lets you display and log statistical information on the bus load during bus monitoring.

Bypassing A method for replacing an existing ECU function by running a new function.

C

Calculated variable A scalar variable that can be measured and recorded, and that is derived from one or more *input variables*.

The following input variable types are supported:

- Measurement variables
- Single elements of measurement arrays or value blocks
- Scalar parameters, or existing calculated variables

The value of a calculated variable is calculated via a user-defined *computation formula* that uses one or more input variables.

Calculated variables are represented by the  symbol.

CalDemo ECU A demo program that runs on the same PC as ControlDesk. It simulates an ECU on which the Universal Measurement and Calibration (XCP) protocol and the Unified Diagnostic Services (UDS) protocol are implemented.

The CalDemo ECU allows you to perform parameter calibration, variable measurement, and ECU diagnostics with ControlDesk under realistic conditions, but without having to have a real ECU connected to the PC. Communication between the CalDemo ECU and ControlDesk can be established via XCP on CAN or XCP on Ethernet, and UDS on CAN.

Tip

If communication is established via XCP on Ethernet, the CalDemo ECU can also run on a PC different from the PC on which ControlDesk is running.

The memory of the CalDemo ECU consists of two areas called memory page. Each page contains a complete set of parameters, but only one page is accessible by the CalDemo ECU at a time. You can easily switch the memory pages of the CalDemo ECU to change from one parameter to another in a single step.

Two ECU tasks run on the CalDemo ECU:

- ECU task #1 runs at a fixed sample time of 5 ms. In ControlDesk's **Measurement Configuration**, ECU task #1 is related to the time-based **5 ms**, **10 ms**, **50 ms** and **100 ms** measurement rasters of the CalDemo ECU.
- ECU task #2 has a variable sample time. Whenever the CalDemo ECU program is started, the initial sample time is 5 ms. This can then be increased or decreased by using the **dSPACE CalDemo** dialog.

  ECU task #2 is related to the **extEvent** measurement raster of the CalDemo ECU.

The CalDemo ECU can also be used to execute diagnostic services and jobs, handle DTCs and perform measurement and calibration via ECU diagnostics.

The CalDemo ECU program is run by invoking `CalDemo.exe`. The file is located in the `.\Demos\CalDemo` folder of the ControlDesk installation.

Calibration Changing the parameter values of real-time applications or ECU applications.

Calibration memory segment Part of the memory of an ECU containing the calibratable parameters. Memory segments can be defined as `MEMORY_SEGMENT` in the A2L file. ControlDesk can use the segments to evaluate the memory pages of the ECU.

ControlDesk lets you perform the calibration of:

- Parameters inside memory segments
- Parameters outside memory segments
- Parameters even if no memory segments are defined in the A2L file.

CAN Bus Monitoring device A device that monitors the data stream on a CAN bus connected to the ControlDesk PC.

The CAN Bus Monitoring device works, for example, with PC-based CAN interfaces such as the DCI-CAN2 or the DCI-CAN/LIN1.

The device supports the following variable description file types:

- DBC
- FIBEX
- AUTOSAR system description (ARXML)

CANGenerator A demo program that simulates a CAN system, that is, it generates signals that can be measured and recorded with ControlDesk. The program runs on the same PC as ControlDesk.

The CANGenerator allows you to use the CAN Bus Monitoring device under realistic conditions, but without having to have any device hardware connected to the PC.

The CAN (Controller Area Network) protocol is used for communication between the CANGenerator and ControlDesk. However, since the CANGenerator runs on the same PC as ControlDesk, ControlDesk does not communicate with the device via a real CAN channel, but via a *virtual CAN channel* implemented on the host PC.

You can start the CAN generator program by running `CANGenerator.exe`. The file is located in the `.\Demos\CANGenerator` folder of the ControlDesk installation.

Capture A data packet of all the measurement variables assigned to a measurement raster. The packet comprises the data that results from a single triggering of the raster.

CCP Abbreviation of CAN Calibration Protocol. This protocol can be implemented on electronic control units (ECUs) and allows users to access ECUs with measurement and calibration systems (MCS) such as ControlDesk.

The basic features of CCP are:

- Read and write access to the ECU memory, i.e., providing access for calibration
- Synchronous data acquisition
- Flash programming for ECU development purposes

The CCP protocol was developed by ASAM e.V. (Association for Standardization of Automation and Measuring Systems e.V.). For the protocol specification, refer to http://www.asam.net.

The following device supports ECUs with an integrated CCP service:

- CCP device

CCP device A device that provides access to an ECU with CCP connected to the ControlDesk PC via CAN, for example, for measurement and calibration purposes via CCP (CAN Calibration Protocol).

Check Button An instrument (or a cell type of the Variable Array) for displaying whether the value of a connected variable matches predefined values or for writing a predefined value to a connected variable.

cmdloader A command line tool for handling applications without using the user interface of an experiment software.

Common axis A parameter that consists of a 1-dimensional array containing axis points. A common axis can be referenced by one or more curves and/or maps. Calibrating the data points of a common axis affects all the curves and/or maps referencing the axis.

Common axes are represented by the symbol.

Common Program Data folder A standard folder for application-specific configuration data that is used by all users.

`%PROGRAMDATA%\dSPACE\<InstallationGUID>\<ProductName>`

or

`%PROGRAMDATA%\dSPACE\<ProductName>\<VersionNumber>`

Computation method A formula or a table that defines the transformation of a source value into a converted value (and vice versa). In addition to the computation methods defined in the variable description file, ControlDesk provides the *__Identity* computation method which means the converted and the source value are equal.

Connected A platform/device state defined by the following characteristics:

- A continuous logical connection is established between ControlDesk and the platform/device hardware.
- A platform/device must be in the 'connected' state before it can change to the 'measuring/recording' or 'online calibration started' state.
- Online calibration is impossible. ControlDesk did not yet adjust the memory segments containing calibration data in the platform/device and on the corresponding hardware. Offline calibration is possible.
- Platform/device configuration is not possible. However, you can invoke platform/device configuration for a platform/device that is in the connected state. ControlDesk temporarily sets the platform/device to the disconnected state.

The 'connected' platform/device state is indicated by the icon.

Connection mode dSPACE real-time systems can be installed within the host PC or connected to the host via a bus interface and/or via Ethernet. When the Ethernet is being used, different network clients might exist. The connection type being used and, in the case of Ethernet, the network client being used, determine the dSPACE systems that can be accessed.

Control primitive A special diagnostic communication object for changing communication states or protocol parameters, or for identifying (ECU) variants.

Controlbar A window or pane outside the working area. Can be docked to an edge of the main window or float in front of it. A controlbar can contain a

document, such as a layout, or a tool, such as the **Bus Navigator**. It can be grouped with other controlbars in a window with tabbed pages.

ControlDesk The main version of ControlDesk for creating and running experiments, and for accessing dSPACE real-time hardware and VEOS. The functionality can be extended by optional software modules.

ControlDesk - Operator Version A version of ControlDesk that provides only a subset of functionality for running existing experiments. The functionality can be extended by optional software modules.

ControlDesk Bus Navigator Module An optional software module for ControlDesk for handling bus messages, such as CAN, LIN, and FlexRay messages, frames, and PDUs and Ethernet packets.

ControlDesk ECU Diagnostics Module An optional software module for ControlDesk that facilitates the calibration and validation of ECU diagnostic functions.

ControlDesk ECU Interface Module An optional software module for ControlDesk for calibration and measurement access to electronic control units (ECUs). The module is also required for calibration and measurement access to virtual ECUs (V-ECUs) used in SIL testing scenarios.

ControlDesk Signal Editor Module An optional software module for ControlDesk for the graphical definition and execution of signal generators for stimulating model variables of real-time/offline simulation applications.

Controller board Single-board hardware computing the real-time application. Contains a real-time processor for fast calculation of the model and I/O interfaces for carrying out the control developments.

Conversion table A table that specifies the value conversion of a source value into a converted value. In the case of verbal conversion, the converted value is a string that represents one numerical value or a range of numerical values.

Conversion type The type of a computation method, for example a linear function or a verbal computation method.

Curve A parameter that consists of

- A 1-dimensional array containing the axis points for the x-axis. This array can also be specified by a reference to a common axis.
- Another 1-dimensional array containing data points. The curve assigns one data point to each axis point.

Curves are represented by the  symbol.

D

DAQ module A hardware module for the acquisition of physical quantities

Data Cursor One or two cursors that are used to display the values of selected chart positions in a Time Plotter or an Index Plotter.

Data logger An object in the Measurement Configuration controlbar that lets you configure a data logging.

Data logger signal list A list that contains the variables to be included in subsequent data loggings on real-time hardware.

Data logging The recording of data on dSPACE real-time hardware that does not require a physical connection between the host PC and the real-time hardware. In contrast to flight recording, data logging is configured in ControlDesk.

Data set A set of the parameters and their values of a platform/device derived from the variable description of the platform/device. There are different types of data sets:

- Reference data set
- Sub data set
- Unassigned data set
- Working data set

DCI-CAN/LIN1 A dSPACE-specific interface between the host PC and the CAN/CAN FD bus and/or LIN bus. The DCI-CAN/LIN1 transfers messages between the CAN-/LIN-based devices and the host PC via the universal serial bus (USB).

DCI-CAN2 A dSPACE-specific interface between the host PC and the CAN bus. The DCI-CAN2 transfers CAN and CAN FD messages between the CAN-based devices and the host PC via the universal serial bus (USB).

DCI-GSI2 Abbreviation of *dSPACE Communication Interface - Generic Serial Interface 2*. A dSPACE-specific interface for ECU calibration, measurement and ECU interfacing.

DCI-GSI2 device A device that provides access to an ECU with DCI-GSI2 connected to the ControlDesk PC for measurement, calibration, and bypassing purposes via the ECU's debug interface.

DCI-KLine1 Abbreviation of *dSPACE Communication Interface - K-Line Interface*. A dSPACE-specific interface between the host PC and the diagnostics bus via K-Line.

Debug interface An ECU interface for diagnostics tasks and flashing.

Default raster A platform-/device-specific measurement raster that is used when a variable of the platform/device is connected to a plotter or a recorder, for example.

Deposition definition A definition specifying the sequence in which the axis point values of a curve or map are deposited in memory.

Device A software component for carrying out calibration and/or measurement, bypassing, ECU flash programming, or ECU diagnostics tasks.

ControlDesk provides the following devices:

- Bus devices:
  - CAN Bus Monitoring device
  - Ethernet Bus Monitoring device
  - LIN Bus Monitoring device
- ECU Diagnostics device
- GNSS device
- Measurement and calibration devices:
  - CCP device
  - DCI-GSI2 device
  - XCP on CAN device
  - XCP on Ethernet device

Each device usually has a variable description that specifies the device's variables to be calibrated and measured.

Diagnostic interface Interface for accessing the fault memory of an ECU.

Diagnostic job (often called Java job) Programmed sequence that is usually built from a sequence of the diagnostic service. A diagnostic job is either a single-ECU job or a multiple-ECU job, depending on whether it communicates with one ECU or multiple ECUs.

Diagnostic protocol A protocol that defines how an ECU communicates with a connected diagnostic tester. The protocol must be implemented on the ECU and on the tester. The diagnostics database specifies the diagnostic protocol(s) supported by a specific ECU.

ControlDesk's ECU Diagnostics device supports CAN and K-Line as the physical layers for communication with an ECU connected to the ControlDesk PC. For information on the supported diagnostic protocols with CAN and K-Line, refer to Basics of ECU Diagnostics with ControlDesk (ControlDesk ECU Diagnostics 🕮).

Diagnostic service A service implemented on the ECU as a basic diagnostic communication element. Communication is performed by selecting a service, configuring its parameters, executing it, and receiving the ECU results. When a service is executed, a defined request is sent to the ECU and the ECU answers with a specific response.

Diagnostic trouble code (DTC) A hexadecimal index for the identification of vehicle malfunctions. DTCs are stored in the fault memory of ECUs and can be read by diagnostic testers.

Diagnostics database A database that completely describes one or more ECUs with respect to diagnostics communication. ControlDesk supports the ASAM MCD-2 D ODX database format, which was standardized by ASAM e.V. (Association for Standardisation of Automation and Measuring Systems e.V.). For the format specification, refer to http://www.asam.net.

Proprietary diagnostics database formats are not supported by ControlDesk.

Diagnostics Instrument An instrument for communicating with an ECU via the diagnostic protocol using diagnostic services, diagnostic jobs, and control primitives.

Disabled A platform/device state defined by the following characteristics:

- No logical connection is established between ControlDesk and the platform/device hardware.
- When a platform/device is disabled, ControlDesk does not try to establish the logical connection for that platform/device. Any communication between the platform/device hardware and ControlDesk is rejected.
- Online calibration is impossible. Offline calibration is possible.
- Platform/device configuration is possible.

The 'disabled' platform/device state is indicated by the icon.

Disconnected A platform/device state defined by the following characteristics:

- No logical connection is established between ControlDesk and the platform/device hardware.
- When a platform/device is in the disconnected state, ControlDesk does not try to re-establish the logical connection for that platform/device.
- Online calibration is impossible. Offline calibration is possible.
- Platform/device configuration is possible.

The 'disconnected' platform/device state is indicated by the icon.

Display An instrument (or a value cell type of the Variable Array) for displaying the value of a scalar variable or the text content of an ASCII variable.

Documents folder A standard folder for user-specific documents.

```
%USERPROFILE%\Documents\dSPACE\<ProductName>\
<VersionNumber>
```

DS1006 Processor Board platform A platform that provides access to a DS1006 Processor Board connected to the host PC for HIL simulation and function prototyping purposes.

DS1007 PPC Processor Board platform A platform that provides access to a single multicore DS1007 PPC Processor Board or a DS1007 multiprocessor system consisting of two or more DS1007 PPC Processor Boards, connected to the host PC for HIL simulation and function prototyping purposes.

DS1104 R&D Controller Board platform A platform that provides access to a DS1104 R&D Controller Board installed in the host PC for function prototyping purposes.

DS1202 MicroLabBox platform A platform that provides access to a MicroLabBox connected to the host PC for function prototyping purposes.

DsDAQ service A service in a real-time application or offline simulation application (OSA) that provides measurement data from the application to the

host PC. Unlike the host service, the DsDAQ service lets you perform, for example, triggered measurements with complex trigger conditions.

The following platforms support applications that contain the DsDAQ service:

- DS1007 PPC Processor Board platform
- DS1202 MicroLabBox platform
- MicroAutoBox III platform
- SCALEXIO platform
- VEOS platform
- XIL API MAPort platform

dSPACE Calibration and Bypassing Service An ECU service for measurement, calibration, bypassing, and ECU flash programming. The dSPACE Calibration and Bypassing Service can be integrated on the ECU. It provides access to the ECU application and the ECU resources and is used to control communication between an ECU and a calibration and/or bypassing tool.

With the dSPACE Calibration and Bypassing Service, users can run measurement, calibration, bypassing, and flash programming tasks on an ECU via the DCI-GSI2. The service is also designed for bypassing ECU functions using dSPACE prototyping hardware by means of the RTI Bypass Blockset in connection with DPMEM PODs. The dSPACE Calibration and Bypassing Service allows measurement, calibration, and bypassing tasks to be performed in parallel.

dSPACE Internal Bypassing Service An ECU service for on-target prototyping. The dSPACE Internal Bypassing Service can be integrated in the ECU application. It lets you add additional functions to be executed in the context of the ECU application without the need for recompiling the ECU application.

dSPACE Log A collection of errors, warnings, information, questions, and advice issued by all dSPACE products and connected systems over more than one session.

dSPACE system A hardware system such as a MicroAutoBox III or SCALEXIO system on which the real-time application runs.

Duration trigger A trigger that defines a duration. Using a duration trigger, you can, for example, specify the duration of data acquisition for a measurement raster. A duration trigger can be used as a stop trigger.

E

ECU Abbreviation of *electronic control unit*.

ECU application A sequence of operations executed by an ECU. An ECU application is mostly represented by a group of files such as ECU Image files, MAP files, A2L files and/or software module description files.

ECU calibration interface Interface for accessing an ECU by either emulating the ECU's memory or using a communication protocol (for example, XCP on CAN).

ECU diagnostics Functions such as:

- Handling the ECU fault memory: Entries in the ECU's fault memory can be read, cleared, and saved.
- Executing diagnostic services and jobs: Users can communicate with an ECU via a diagnostic protocol using diagnostic services, diagnostic jobs, and control primitives.

ControlDesk provides the ECU Diagnostics device device to access ECUs for diagnostic tasks. Communication is via diagnostic protocols implemented on the ECUs.

ECU diagnostics with ControlDesk are completely based on Open Diagnostic Data Exchange (ODX), the ASAM MCD-2 D diagnostics standard.

ControlDesk provides the Fault Memory Instrument and the Diagnostics Instrument for ECU diagnostics tasks.

ECU Diagnostics device A device that provides access to ECUs connected to the ControlDesk PC via CAN or K-Line for diagnostics or flash programming purposes.

ControlDesk provides the *ECU Diagnostics v2.0.2* device, which supports the ASAM MCD-3 D V2.0.2 standard.

ControlDesk supports the following ODX database standards:

- ASAM MCD-2 D V2.0.1
- ASAM MCD-2 D V2.2.0 (ISO 22901-1)

ECU flash programming A method by which new code or data is stored in ECU flash memory.

ECU Image file A binary file that is part of the ECU application. It usually contains the code of an ECU application and the data of the parameters within the application. It can be stored as an Intel Hex (HEX) or Motorola S-Record (MOT or S19) file.

EESPort Configurations controlbar A controlbar for configuring error configurations.

Electrical error simulation Simulating electrical errors such as loose contacts, broken cables, and short-circuits, in the wiring of an ECU. Electrical error simulation is performed by the failure simulation hardware of an HIL simulator.

Electrical Error Simulation port (EESPort) An *Electrical Error Simulation port* (EESPort) provides access to a failure simulation hardware for simulating electrical errors in an ECU wiring according to the ASAM AE XIL API standard.

The configuration of the EESPort is described by a hardware-dependent *port configuration* and one or more *error configurations*.

Environment model A model that represents a part or all of the ECU's environment in a simulation scenario.

The environment model is a part of the simulation system.

Environment VPU The executable of an environment model built for the VEOS platform. An environment VPU is part of an offline simulation application (OSA).

Error An electrical error that is specified by:

- An error category
- An error type
- A load type

Error category The error category defines how a signal is disturbed. Which errors you can create for a signal depends on the connected failure simulation hardware.

Error configuration An XML file that describes a sequence of errors you want to switch during electrical error simulation. Each error configuration comprises error sets with one or more errors.

Error set An error set is used to group errors (pin failures).

Error type The error type specifies the way an error category – i.e., an interruption or short circuit of signals – is provided. The error type defines the disturbance itself.

Ethernet Bus Monitoring device A device that monitors the data stream on an Ethernet network connected to the ControlDesk PC.

The device supports the following variable description file type:

- AUTOSAR system description (ARXML)

Ethernet connection A mode for connecting dSPACE real-time hardware to the host PC via Ethernet. The list below shows the possible Ethernet connections:

- dSPACE real-time hardware installed in an expansion box connected to the host PC via Ethernet.
- MicroAutoBox II/III and MicroLabBox connected via Ethernet.

Ethernet decoding A feature of the Bus Navigator that lets you view protocol data and raw data of an Ethernet frame.

Event An event that is triggered by an action performed in ControlDesk.

Event context The scope of validity of event sources and events. There is one event handler code area for each event context.

Event handler Code that is executed when the related event occurs.

Event management Functionality for executing custom code according to actions triggered by ControlDesk.

Event source An object providing and triggering events. *LayoutManagement* is an example of an event source.

Event state State of an event. ControlDesk provides the following event states:

- No event handler is defined
- Event handler is defined and enabled
- Event handler is defined and disabled
- Event handler is defined, but no Python code is available
- Event handler is deactivated because a run-time error occurred during the execution of the Python code

Expansion box A box that hosts dSPACE boards. It can be connected to the host PC via bus connection or via network.

Experiment A container for collecting and managing information and files required for a parameter calibration and/or measurement task. A number of experiments can be collected in a project but only one of them can be active.

Extension script A Python script (PY or PYC file) that is executed each time ControlDesk starts up. An extension script can be executed for all users or user-specifically.

F

Failure insertion unit Hardware unit used with dSPACE simulators to simulate failures in the wiring of an ECU, such as broken wire and short circuit to ground.

Fault memory Part of the ECU memory that stores diagnostic trouble code (DTC) entries with status and environment information.

Fault Memory Instrument An instrument for reading, clearing, and saving the content of the ECU's fault memory.

Firmware update An update for the firmware installed in the board's flash memory. Firmware should be updated if it is older than required by the real-time application to be downloaded.

Fixed axis An axis with data points that are not deposited in the ECU memory. Unlike a common axis, a fixed axis is specified within a curve or map. The parameters of a fixed axis cannot be calibrated.

Fixed parameter A parameter that has a fixed value during a running simulation. Changing the value of a fixed parameter does not immediately affect the simulation results. The affect occurs only after you stop the simulation and

start it again. A fixed parameter is represented by an added pin in its symbol, for example:  .

Flash job A specific diagnostic job for flashing the ECU memory. A flash job implements the process control for flashing the ECU memory, such as initialization, security access, writing data blocks, etc.

Flight recording The recording of data on dSPACE real-time hardware that does not require a physical connection between the host PC and the real-time hardware. In contrast to data logging, flight recording is not configured in ControlDesk but via RTI and RTLib.

Frame An instrument for adding a background frame to a layout, for example, to visualize an instrument group.

G

Gauge An instrument for displaying the value of the connected variable by a needle deflection on a circular scale.

Gigalink module A dSPACE board for connecting several processor boards in a multiprocessor system. The board allows high-speed serial data transmission via fiber-optic cable.

GNSS data Positioning and timing data that is transmitted by a Global Navigation Satellite System (GNSS), such as GPS, GLONASS, or Galileo. GNSS receivers use this data to determine their location.

GNSS device A device that provides positioning data from a GNSS receiver (e.g., a serial GPS mouse) in ControlDesk.

ControlDesk provides the *GNSS (GPS, GLONASS, Galileo, ...)* device that supports various global navigation satellite systems.

GPX file An XML file that contains geodata, such as waypoints, routes, or tracks. In ControlDesk, you can import GPX files to visualize GNSS positioning data in a Map instrument.

Group A collection of variables that are grouped according to a certain criterion.

H

Heading Indicator An instrument displaying the heading direction of a simulated aircraft on a circular scale.

Host service A service in a real-time application that provides measurement data from the application to the host PC.

The following platforms support applications that contain the host service:

- DS1006 Processor Board platform
- DS1104 R&D Controller Board platform
- MicroAutoBox platform
- Multiprocessor System platform

Index Plotter A plotter instrument for displaying signals that are measured in an event-based raster (index plots).

Input quantity A measurement variable that is referenced by a common axis and that provides the input value of that axis.

Instrument An on-screen representation that is designed to monitor and/or control simulator variables interactively and to display data captures. Instruments can be arranged freely on layouts.

The following instruments can be used in ControlDesk:

- 3-D Viewer
- Airspeed Indicator
- Altimeter
- Animated Needle
- Artificial Horizon
- Bar
- Browser
- Bus Instrument
- Check Button
- Diagnostics Instrument
- Display
- Fault Memory Instrument
- Frame
- Gauge
- Heading Indicator
- Index Plotter
- Invisible Switch
- Knob
- Multistate Display
- Multiswitch
- Numeric Input
- On/Off Button

- Push Button
- Radio Button
- Selection Box
- Slider
- Sound Controller
- Static Text
- Steering Controller
- Table Editor
- Time Plotter
- Variable Array
- XY Plotter

Instrument Navigator A controlbar that displays a tree with all the instruments of the active layout and all the variables that are connected to them. The Instrument Navigator's main function is easy selection of instruments in complex layouts.

Instrument script A Python script used to extend the functionality of an instrument.

Instrument Selector A controlbar that provides access to ControlDesk's instruments. The instruments can be placed on a layout via double-click or drag & drop.

Interface description data (IF_DATA) An information structure, mostly provided by an A2L file, describing the type, features and configuration of an implemented ECU interface.

Internal Interpreter ControlDesk's built-in programming interface for editing, running and importing Python scripts. It contains an Interpreter controlbar where the user can enter Python commands interactively and which displays output and error messages of Python commands.

Interpreter controlbar A controlbar that can be used to execute line-based commands. It is used by the Internal Interpreter to print out Python standard error messages and standard output during the execution or import of Python scripts.

Invisible Switch An instrument for defining an area that is sensitive to mouse operations.

IOCNET IOCNET (I/O carrier network) is a dSPACE-specific high-speed serial communication bus that connects all the real-time hardware in a SCALEXIO system. IOCNET can also be used to build a multiprocessor system that consists of multiple SCALEXIO processor hardware components.

K

Knob An instrument for displaying and setting the value of the connected variable by means of a knob on a circular scale.

L

Label list A list of user-defined variables that can be used for saving connected variables, etc.

Layout A window with instrument s connected to variables of one or more simulation models.

Layout Navigator A controlbar that displays all opened layout s. It can be used for switching between layouts.

Layout script A Python script used to extend the functionality of a layout .

Leading raster The measurement raster that specifies the trigger settings for the Time Plotter display. The leading raster determines the time range that is visible in the plotter if a start and stop trigger is used for displaying the signals.

LIN Bus Monitoring device A device that monitors the data stream on a LIN bus connected to the ControlDesk PC.

The LIN Bus Monitoring device works, for example, with PC-based LIN interfaces.

The device supports the following variable description file types:

- LDF
- FIBEX
- AUTOSAR system description (ARXML)

Load type The load type specifies the option to disturb a signal with or without load rejection.

Local Program Data folder A standard folder for application-specific configuration data that is used by the current, non-roaming user.

`%USERPROFILE%\AppData\Local\dSPACE\<InstallationGUID>\<ProductName>`

Logical link A representation of an ECU specified in the diagnostics database. A logical link contains information on the ECU itself, and all the information required for accessing it, such as the diagnostic protocol used for

communication between the ECU and ControlDesk. Each logical link is represented by a unique short name in the ODX database.

Look-up table A look-up table maps one or more input values to one output value. You have to differentiate between the following look-up table types:

- A 1-D look-up table maps one input value to one output value.
- A 2-D look-up table maps two input values to one output value.
- An n-D look-up table maps multidimensional table data with 3 or more input values to one output value.

Look-up table is a generic term for curves and maps.

M

Main variable A scalar variable that is visualized in an instrument that can be used to change parameter values. In addition to the main variable, additional write variables can also be connected to (but not visualized in) the same instrument. When you change the value of the main variable in an instrument, the changed value is also applied to all the additional write variables connected to that instrument.

Map A parameter that consists of

- A 1-dimensional array containing the axis points for the x-axis. This array can also be specified by a reference to a common axis.
- A 1-dimensional array containing the axis points for the y-axis. This array can also be specified by a reference to a common axis.
- A 2–dimensional array containing data points. The map assigns one data point of the array to each pair of x-axis and y-axis points.

Maps are represented by the  symbol.

Map file A file that contains symbols (symbolic names) and their physical addresses. It is generated during a build process of an ECU application.

Map instrument A customized Browser instrument. It uses an instrument script to open a web map and connect positioning data to the map. The Map instrument offers prepared connection nodes to connect variables with GNSS data.

Measurement Viewing and analyzing the time traces of variables, for example, to observe the effects of ECU parameter changes.

ControlDesk provides various instruments for measuring variables.

Measurement (variable type) A scalar variable that can be measured, including individual elements of a measurement array.

Measurement variables are represented by the  symbol.

Measurement array A 1-, 2-, or 3-dimensional array of measurement variables. In variable lists, ControlDesk displays entries for the measurement array itself and for each array element.

Measurement arrays are represented by the  symbol.

Measurement buffer A ring buffer that buffers measurement data at the start of a measurement. The measurement buffer size determines the amount of data that can be buffered. Earlier values are overwritten by later values when the buffer capacity is exceeded (buffer overflow).

Measurement Configuration A controlbar that allows you to configure measurement, recording and data logging.

Measurement Data API Application programming interface for accessing measurement data. The API lets the user access measurement data without having to use ControlDesk.

Measurement Data Pool A controlbar that provides access to measurement data recorded in measurement data files.

Measurement raster Specification of how often a value of a variable is updated during a measurement. A measurement raster can be derived from a measurement service.

Measurement service The generic term for the following services:

- CCP service
- DsDAQ service
- Host service
- XCP service

Measurement signal list A list containing the variables to be included in subsequent measurements and recording. The list is global for all platforms/devices of the current experiment. The measurement signal list is available in the configuration area of the **Measurement Configuration** controlbar.

Measurement variable Any variable type that can be measured but not calibrated.

Measuring/recording A platform/device state defined by the following characteristics:

- A continuous logical connection is established between ControlDesk and the platform/device hardware.
- Online calibration is possible. Parameter values can be changed directly on the platform/device hardware.
- A measurement (or recording) is running.
- Platform/device configuration is not possible.

The 'measuring' / 'recording' platform/device state is indicated by the icon.

Memory page An area of a calibration memory. Each page contains a complete set of parameters of the platform/device hardware, but only one of the pages is "visible" to the microcontroller of the ECU or the real-time processor (RTP) of the platform hardware at a time.

ControlDesk supports platform/device hardware with up to two memory pages. These are usually the working page and the reference page. The parameter values on the two memory pages usually are different. ControlDesk lets you switch from one page to the other, so that when parameters are changed on one page, the changes can be made available to the ECU or prototyping hardware via a single page switch.

Messages controlbar A controlbar displaying a history of all error and warning messages that occur during work with ControlDesk.

MicroAutoBox III platform A platform that provides access to a MicroAutoBox III connected to the host PC for function prototyping purposes such as Bypassing.

MicroAutoBox platform A platform that provides access to a MicroAutoBox II connected to the host PC for function prototyping purposes such as bypassing.

Mirrored memory A memory area created by ControlDesk on the host PC that mirrors the contents of the available memory pages of calibration and prototyping hardware. For hardware with two memory pages, the mirrored memory is divided into a reference and a working page, each of them containing a complete set of parameters. When a calibration or prototyping platform/device is added to an experiment, ControlDesk initially fills the available memory pages of the mirrored memory with the contents of the ECU Image file (initial filling for calibration devices) or with the contents of the SDF file (initial filling for platforms).

- Mirrored memory for offline calibration

  Parameter values can even be changed offline. Changes to parameter values that are made offline affect only the mirrored memory.
- Offline-to-online transition for online calibration

  For online calibration, an offline-to-online transition must be performed. During the transition, ControlDesk compares the memory pages of the hardware of each platform/device with the corresponding pages of the mirrored memory. If the pages differ, the user has to equalize them by uploading them from the hardware to the host PC, or downloading them from the host PC to the hardware.
- Mirrored memory for online calibration

  When ControlDesk is in the online mode, parameter value changes become effective synchronously on the memory pages of the hardware and in the mirrored memory. In other words, parameter values on the hardware and on the host PC are always the same while you are performing online calibration.

Modular system A dSPACE processor board and one or more I/O boards connected to it.

Multi-capture history The storage of all the captures acquired during a triggered measurement. The amount of stored data depends on the measurement buffer.

Multi-pin error A feature of the SCALEXIO concept for electrical error simulation that lets you simulate a short circuit between three or more signal

channels and/or bus channels. The channels can be located on the same or different boards or I/O units. You can simulate a short circuit between:

- Channels of the same signal category (e.g., four signal generation channels)
- Channels of different signal categories (e.g., three signal generation channels and two signal measurement channels)
- Signal channels and bus channels (e.g., two signal generation channels, one signal measurement channel, and one bus channel)

Multiple electrical errors A feature of the SCALEXIO concept for electrical error simulation that lets you switch electrical errors at the same time or in succession. For example, you can simulate an open circuit for one channel and a short circuit for another channel at the same time, without deactivating the first error.

Multiprocessor System platform A platform that provides access to:

- A multicore application running on a multicore DS1006 board
- A multiprocessor application on a multiprocessor system consisting of two or more DS1006 processor boards interconnected via Gigalink.

ControlDesk handles a multiprocessor/multicore system as a unit and uses one system description file (SDF file) to load the applications to all the processor boards/cores in the system.

Multistate Display An instrument for displaying the value of a variable as an LED state and/or as a message text.

Multistate LED A value cell type of the Variable Array for displaying the value of a variable as an LED state.

Multiswitch An instrument for changing variable values by clicking sensitive areas in the instrument and for visualizing different states depending on the current value of the connected variable.

N

Numeric Input An instrument (or a value cell type of the Variable Array) for displaying and setting the value of the connected variable numerically.

O

Observing variables Reading variable values cyclically from the dSPACE real-time hardware and displaying their current values in ControlDesk, even if no measurement is running. Variable observation is performed without using a measurement buffer, and no value history is kept.

For platforms that support variable observation, variable observation is available for parameters and measurement variables that are visualized in single-shot instruments (all instruments except for a plotter). If you visualize a variable in a single-shot instrument, the variable is not added to the measurement signal list. Visualizing a parameter or measurement variable in a plotter automatically adds the variable to the measurement signal list.

ControlDesk starts observing variables if one of the following conditions is true:

- Online Calibration is started for the platform.

  All the parameters and measurement variables that are visualized in single-shot instruments are observed.
- Measurement is started for the platform.

  All the visualized parameters and measurement variables that are not activated for measurement in the measurement signal list are observed. Data of the activated parameters and measurement variables is acquired using measurement rasters.

ODX database Abbreviation of Open Diagnostic Data Exchange, a diagnostics database that is the central ECU description for working with an ECU Diagnostics device in ControlDesk. The ODX database contains all the information required to perform diagnostic communication between ControlDesk and a specific ECU or set of ECUs in a vehicle network. ControlDesk expects the database to be compliant with ASAM MCD-2 D (ODX).

Offline State in which the parameter values of platform/device hardware in the current experiment cannot be changed. This applies regardless of whether or not the host PC is physically connected to the hardware.

The mirrored memory allows parameter values to be changed even offline.

Offline simulation A PC-based simulation in which the simulator is not connected to a physical system and is thus independent of the real time.

Offline simulation application (OSA) An offline simulation application (OSA) file is an executable file for VEOS. After the build process with a tool such as the VEOS Player, the OSA file can be downloaded to VEOS.

An OSA contains one or more VPUs, such as V-ECUs and/or environment VPUs.

On/Off Button An instrument (or a value cell type of the Variable Array) for setting the value of the connected parameter to a predefined value when the button is pressed (On value) and released (Off value).

Online calibration started A platform/device state defined by the following characteristics:

- A continuous logical connection is established between ControlDesk and the platform/device hardware.
- Online calibration is possible. Parameter values can be changed directly on the platform/device hardware.
- Platform/device configuration is not possible.

Before starting online calibration, ControlDesk lets you compare the memory pages on the platform/device hardware with the corresponding pages of the mirrored memory. If the parameter values on the pages differ, they must be

equalized by uploading the values from the hardware to ControlDesk, or downloading the values from ControlDesk to the hardware. However, a page cannot be downloaded if it is read-only.

The 'online calibration started' platform/device state is indicated by the symbol.

Operation signal A signal which represents the result of an arithmetical operation (such as addition or multiplication) between two other signals.

Operator mode A working mode of ControlDesk in which only a subset of the ControlDesk functionality is provided. You can work with existing experiments but not modify them, which protects them from unintentional changes.

Output parameter A parameter or writable measurement whose memory address is used to write the computed value of a calculated variable to.

P

Parameter Any variable type that can be calibrated.

Parameter (variable type) A scalar parameter, as well as the individual elements of a value block.

Scalar parameters are represented by the 🅿 symbol.

Parameter limits Limits within which parameters can be changed. Parameters have hard and weak limits.

- Hard limits

  Hard limits designate the value range of a parameter that you *cannot* cross during calibration.

  The hard limits of a parameter originate from the corresponding variable description and cannot be edited in ControlDesk.
- Weak limits

  Weak limits designate the value range of a parameter that you *should not* cross during calibration. When you cross the value range defined by the weak limits, ControlDesk warns you.

  In ControlDesk, you can edit the weak limits of a parameter within the value range given by the parameter's hard limits.

PHS (Peripheral High Speed) bus A dSPACE-specific bus for communication between a processor board and the I/O boards in a modular system. It allows direct I/O operations between the processor board (bus master) and I/O boards (bus slaves).

PHS-bus-based system A modular dSPACE system consisting of a processor board such as the DS1006 Processor Board and I/O boards. They communicate with each other via the PHS (Peripheral High Speed) bus.

Pitch variable A variable connected to the pitch scale of an Artificial Horizon.

Platform A software component representing a simulator where a simulation application is computed in real-time (on dSPACE real-time hardware) or in non-real-time (on VEOS).

ControlDesk provides the following platforms:

- DS1006 Processor Board platform
- DS1007 PPC Processor Board platform
- DS1104 R&D Controller Board platform
- DS1202 MicroLabBox platform
- MicroAutoBox platform
- MicroAutoBox III platform
- Multiprocessor System platform
- SCALEXIO platform
- VEOS platform
- XIL API MAPort platform

Each platform usually has a variable description that specifies its variables.

Platform trigger A trigger that is available for a platform and that is evaluated on the related dSPACE real-time hardware or VEOS.

Platforms/Devices controlbar A controlbar that provides functions to handle devices, platforms, and the applications assigned to the platforms.

Plotter instrument ControlDesk offers three plotter instruments with different main purposes:

- The Index Plotter displays signals in relation to events.
- The Time Plotter displays signals in relation to measurement time.
- The XY Plotter displays signals in relation to other signals.

Port configuration To interface the failure simulation hardware, an EESPort needs the hardware-dependent *port configuration file* (PORTCONFIG file). The file's contents must fit the connected HIL simulator architecture and its failure simulation hardware.

Postprocessing The handling of measured and recorded data by the following actions:

- Displaying measured or recorded data
- Zooming into measured or recorded signals with a plotter
- Displaying the values of measurement variables and parameters as they were at any specific point in time

Processor board A board that computes real-time applications. It has an operating system that controls all calculations and communication to other boards.

Project A container for collecting and managing the information and files required for experiment/calibration/modification tasks in a number of experiments. A project collects the experiments and manages their common data.

Project controlbar A controlbar that provides access to projects and experiments and all the files they contain.

Project root directory The directory on your file system to which ControlDesk saves all the experiments and documents of a project. Every project is associated with a project root directory, and several projects can use the same project root directory. The user can group projects by specifying several project root directories.

ControlDesk uses the Documents folder as the default project root directory unless a different one is specified.

Properties controlbar A controlbar providing access to the properties of, for example, platforms/devices, layouts/instruments, and measurement/recording configurations.

Proposed calibration A calibration mode in which the parameter value changes that the user makes do not become effective on the hardware until they are applied. This allows several parameter changes to be written to the hardware together. Being in proposed calibration mode is like being in the offline calibration mode temporarily.

Push Button An instrument (or a value cell type of the Variable Array) for setting the value of the connected parameter by push buttons.

Python Editor An editor for opening and editing PY files.

Q

Quick start measurement A type of measurement in which all the ECU variables configured for measurement are measured and recorded, starting with the first execution of an ECU task. ControlDesk supports quick start measurements on ECUs with DCI-GSI2, CCP, and XCP (except for XCP on Ethernet with the TCP transmission protocol).

Quick start measurement can be used to perform cold start measurements. Cold start means that the vehicle and/or the engine are cooled down to the temperature of the environment and then started. One reason for performing cold start measurements is to observe the behavior of an engine during the warm-up phase.

R

Radio Button An instrument for displaying and setting the value of the connected parameter by radio buttons.

Real-time application An application that can be executed in real time on dSPACE real-time hardware. A real-time application can be built from a Simulink model containing RTI blocks, for example.

Record layout A record layout is used to specify a data type and define the order of the data in the memory of the target system (ECU, for example). For scalar data types, a record layout allows you to add an address mode (direct or indirect). For structured (aggregated) data types, the record layout specifies all the structure elements and the order they appear in.

The `RECORD_LAYOUT` keyword in an A2L file is used to specify the various record layouts of the data types in the memory. The structural setup of the various data types must be described in such a way that a standard application system will be able to process all data types (reading, writing, operating point display etc.).

Record layout component A component of a record layout. A structured record layout consists of several components according to the ASAP2 specification. For example, the AXIS_PTS_X component specifies the x-axis points, and the FNC_VALUES component describes the function values of a map or a curve.

Recorder An object in the Measurement Configuration controlbar that specifies and executes the recording of variables according to a specific measurement configuration.

Recorder signal list A list that contains the variables to be included in subsequent recordings.

Recording Saving the time traces of variables to a file. Both measurement variables and parameters can be recorded. Recorded data can be postprocessed directly in ControlDesk.

A recording can be started and stopped immediately or via a trigger:

- Immediate recording

  The recording is started and stopped without delay, without having to meet a trigger condition.
- Triggered recording

  The recording is not started or stopped until certain trigger conditions are met. These conditions can be defined and edited in ControlDesk.

Reduction data Additional content in an MF4 file that allows for visualizing the MF4 file data depending on the visualization resolution. Reduction data therefore improves the performance of the visualization and postprocessing of measurement data.

Reference data set A read-only data set assigned to the reference page of a device that has two memory pages. There can be only one reference data set for each device. The reference data set is read-only.

Reference page Memory area containing the parameters of an ECU. The reference page contains the read-only reference data set.

Note

Some platforms/devices provide only a working page. You cannot switch to a reference page in this case.

Resynchronization Mechanism to periodically synchronize the drifting timers of the platform/device hardware ControlDesk is connected to. Resynchronization means adjustment to a common time base.

Roll variable A variable connected to the roll scale of an Artificial Horizon.

S

Sample count trigger A trigger that specifies the number of samples in a data capture.

A sample count trigger can be used as a stop trigger.

SCALEXIO platform A platform that provides access to a single-core, multicore or multiprocessor SCALEXIO system connected to the host PC for HIL simulation and function prototyping purposes.

SCALEXIO system A dSPACE hardware-in-the-loop (HIL) system consisting of at least one processing hardware component, I/O boards, and I/O units. They communicate with each other via the IOCNET. In a SCALEXIO system, two types of processing hardware can be used, a DS6001 Processor Board or a real-time industry PC as the SCALEXIO Processing Unit. The SCALEXIO system simulates the environment to test an ECU. It provides the sensor signals for the ECU, measures the signals of the ECU, and provides the power (battery voltage) for the ECU and a bus interface for restbus simulation.

SDF file The system description file that describes the files to be loaded to the individual processing units of a simulation platform. It also contains the variable description of the relevant simulation application.

The SDF file is generated automatically when the TRC file is built.

Segment The minimum part a segment signal can consist of.

There are different kinds of segments to be used in segment signals:

- Segments to form synthetic signal shapes (sine, sawtooth, ramp, etc.)
- Segments to perform arithmetical operations (addition, multiplication) with other segments
- Segments to represent numerical signal data (measured data)

Segment signal A signal consisting of one or more segments.

Selection Box An instrument for selecting a text-value entry and setting the respective numerical value for the connected variable.

Signal

- Representation of a variable measured in a specific measurement raster.
- Generic term for segment signals and operation signals.

  A signal is part of a signal description set which can be displayed and edited in the working area.

Signal description set A group of one or more signals.

A signal description set and its signals can be edited in the working area by means of the Signal Editor. Each signal description set is stored as an STZ file either in the **Signal Description Sets** folder or in the **Signal Generators** folder.

Signal Editor A software component to create, configure, display, and manage signals in signal description sets.

Signal file A file that contains the wiring information of a simulator and that is part of the standard dSPACE documentation of dSPACE Simulator Full-Size. Normally, dSPACE generates this file when designing the simulator. Before using a failure simulation system, users can adapt the signal file to their needs.

Signal generator An STZ file containing a signal description set and optional information about the signal mapping, the description of variables, and the real-time platform.

The file is located in the **Signal Generators** folder and used to generate, download, and control Real-Time Testing sequences, which are executed on the real-time platform to stimulate model variables in real time.

Signal Mapping A controlbar of the Signal Editor to map model variables to signals and variable aliases of a signal generator.

Signal Selector A controlbar of the Signal Editor. The Signal Selector provides signals and segments for arranging and configuring signal description sets in the working area.

SIL testing Abbreviation of *software-in-the-loop testing*.

Simulation and testing of individual software functions, complete virtual ECUs (V-ECUs), or even V-ECU networks on a local PC or highly parallel in the cloud independently of real-time constraints and real hardware.

Simulation application The generic term for offline simulation application (OSA) and real-time application.

Simulation system A description of the composition of V-ECU models, environment models, real ECUs, and their interconnections required for simulating the behavior of a system. A simulation system is the basis for the generation of a simulation application for a given simulator platform.

Simulation time group Group of platforms/devices in an experiment whose simulation times are synchronized with each other. If resynchronization is enabled, ControlDesk synchronizes a simulation time group as a whole, not the single members of the group individually.

Simulator A system that imitates the characteristics or behaviors of a selected physical or abstract system.

Single-processor system A system that is based on one dSPACE processor or controller board.

Single-shot instrument An instrument that displays an instantaneous value of a connected variable without keeping a value history. In ControlDesk, all instruments except for a plotter are single-shot instruments. For platforms that support the variable observer functionality, you can use single-shot instruments to observe variables.

Slave application An application assigned to the slave DSP of a controller or I/O board. It is usually loaded and started together with the real-time application running on the corresponding main board.

Slave DSP A DSP subsystem installed on a controller or I/O board. Its slave application can be loaded together with the real-time application or separately.

Slider An instrument (or a value cell type of the Variable Array) for displaying and setting the value of the connected variable by means of a slide.

Sound Controller An instrument for generating sounds to be played.

Standard axis An axis with data points that are deposited in the ECU memory. Unlike a common axis, a standard axis is specified within a curve or map. The parameters of a standard axis can be calibrated, which affects only the related curve or map.

Start trigger A trigger that is used, for example, to start a measurement raster. A platform trigger can be used as a start trigger.

Static Text An instrument for displaying explanations or inscriptions on the layout.

Steering Controller An instrument for changing variable values using a game controller device such as a joystick or a steering wheel.

Stimulation Writing signals to variables in real-time models during a simulation run.

Stop trigger A trigger that is used, for example, to stop a measurement raster.

String A text variable in ASCII format.

Strings are represented by the  symbol.

Struct A variable with the struct data type. A struct contains a structured list of variables that can have various data types. In ControlDesk, a struct variable can contain either parameters and value blocks or measurement variables and measurement arrays. ControlDesk supports nested structs, i.e., structs that contain further structs and struct arrays as elements.

Structs are represented by the  symbol.

Struct array An array of homogeneous struct variables.

Struct arrays are represented by the  symbol.

STZ file A ZIP file containing signal descriptions in the STI format. The STZ file can also contain additional MAT files to describe numerical signal data.

Sub data set A data set that does not contain the complete set of the parameters of a platform/device.

Symbol A symbolic name of a physical address in a MAP file. A symbol can be associated to a variable in the Variable Editor, for example, to support an address updates.

System variable A type of variable that represents internal variables of the device or platform hardware and that can be used as measurement signals in ControlDesk to give feedback on the status of the related device or platform hardware. For example, an ECU's power supply status or the simulation state of a dSPACE board can be visualized via system variables.

T

Table Editor An instrument for displaying and setting values of a connected curve, map, value block, or axis in a 2-D, 3-D, and grid view. The Table Editor can also display the values of a measurement array.

The Table Editor can be used for the following variable types:

- Common axis ()
- Curve ()
- Map ()
- Measurement array ()
- Value block ()

Time cursor A cursor which is visible at the same time position in the following instruments:

- In all Time Plotters
- In all XY Plotters
- In all bus monitoring lists

You can use the time cursor to view signal values at a specific point in time. If you move the time cursor, all measured signals and the respective parameters are

updated. Instruments and bus monitoring lists display the values that are available at the selected time position.

Time Plotter A plotter instrument for displaying signals that are measured in a time-based raster (time plots).

Topology A description of the processor boards belonging to a multiprocessor system and their interconnections via Gigalinks. The topology also contains information on which Gigalink port of each processor board is connected to the Gigalink ports of other processor boards in the multiprocessor system.

Topology information is contained in the real-time application (PPC/x86/RTA) files of the multiprocessor system's processor boards.

TRC file A variable description file with information on the variables available in an environment model running on a dSPACE platform.

Trigger A condition for executing an action such as starting and stopping a measurement raster or a recorder.

The generic term for the following trigger types:

- Duration trigger
- Platform trigger
- Sample count trigger

Trigger condition A formula that specifies the condition of a trigger mathematically.

Triggered measurement The measurement of a measurement raster started by a platform trigger. The data flow between the dSPACE real-time hardware or VEOS and the host PC is not continuous.

U

Unassigned data set A data set that is assigned neither to the working page nor to the reference page of a platform/device. An unassigned data set can be defined as the new working or reference data set. It then replaces the "old" working or reference data set and is written to the corresponding memory page, if one is available on the platform/device.

Unplugged A platform/device state defined by the following characteristics:

- The logical connection between ControlDesk and the hardware was interrupted, for example, because the ignition was turned off or the ControlDesk PC and the hardware were disconnected.
- Before the state of a platform/device changes to 'unplugged', the platform/device was in one of the following states:
  - 'Connected'
  - 'Online calibration started'
  - 'Measuring' / 'Recording'

Tip

A device for which the connection between ControlDesk and the device hardware currently is interrupted is also set to the 'unplugged' state when you start online calibration if both the following conditions are fulfilled:

- The device's **Start unplugged** property is enabled.
- The **Start online calibration behavior** property is set to 'Ignore differences'.

This is possible for CCP and XCP devices. For details on the two properties listed above, refer to General Settings Properties (ControlDesk Platform Management 🕮).

- If the Automatic Reconnect feature is enabled for a platform/device and if the platform/device is in the 'unplugged' state, ControlDesk periodically tries to re-establish the logical connection for that platform/device.
- Online calibration is impossible. Offline calibration is possible.
- Platform/device configuration is possible.

The 'unplugged' platform/device state is indicated by the ⚠ icon.

Untriggered measurement The measurement of a measurement raster not started by a platform trigger. The data flow between the dSPACE real-time hardware or VEOS and the host PC is continuous.

User function An external function or program that is added to the ControlDesk user interface for quick and easy access during work with ControlDesk.

User Functions Output A controlbar that provides access to the output of external tools added to the **Automation** ribbon.

V

Value block A parameter that consists of a 1- or 2-dimensional array of scalar parameters.

In variable lists, ControlDesk displays entries for the value block itself and for each array element.

Value blocks are represented by the 🕮 symbol.

Value conversion The conversion of the original *source values* of variables of an application running on an ECU or dSPACE real-time hardware into the corresponding scaled *converted values*.

Variable Any parameter or measurement variable defined in a variable description. ControlDesk provides various instruments to visualize variables.

Variable alias An alias name that lets the user control the property of a segment by a model parameter of a real-time application.

Variable Array An instrument for calibrating parameters and displaying measurement variable values.

The Variable Array can be used for the following variable types:

- Measurement ( )
- Measurement array ( )
- String ( )
- Struct ( )
- Struct array ( )
- Value ( )
- Value block ( )

Variable connection The connection of a variable to an instrument. Via the variable connection, data is exchanged between a variable and the instrument used to measure or calibrate the variable. In other words, variable connections are required to visualize variables in instrument.

Variable description A file describing the variables in a simulation application, which are available for measurement, calibration, and stimulation.

Variable Editor A tool for viewing, editing, and creating variable descriptions in the ASAM MCD-2MC (A2L) file format. The Variable Editor allows you to create A2L files from scratch, or to import existing A2L files for modification.

Variable Filter A variable filter contains the filter configuration of a combined filter, which is used to filter the variable list in the **Variables** controlbar using a combination of filter conditions.

Variables controlbar A controlbar that provides access to the variables of the currently open experiment.

V-ECU Abbreviation of *virtual ECU*.

ECU software that can be executed in a software-in-the-loop (SIL) testing environment such as a local PC or highly parallel in the cloud independently of real-time constraints and real ECU hardware.

Vehicle information The ODX database can contain information for one or more vehicles. Vehicle information data is used for vehicle identification purposes and for access to vehicles. It references the access paths (logical links) to the ECUs.

VEOS A simulator which is part of the PC and allows the user to run an offline simulation application (OSA) without relation to real time.

VEOS Player is the graphical user interface for VEOS.

VEOS platform A platform that configures and controls the offline simulation application (OSA) running in VEOS and that also provides access to the application's environment VPU.

VEOS Player An application running on the host PC for editing, configuring and controlling an offline simulation application (OSA) running in VEOS.

Verbal conversion A conversion in which a conversion table is used to specify the computation of numerical values into strings. The verbal conversion table is used when you switch the value representation from source to converted mode and vice versa.

Verbal conversion range A conversion in which a conversion table is used to specify the computation of a range of numerical values into strings. The verbal conversion range table is used when you switch the value representation from source to converted mode and vice versa.

View set A named configuration of the controlbars of ControlDesk. A view set has a default state and a current state that can differ from the default state. The configuration includes the geometry, visibility, and docking or floating state of controlbars.

Visualization The representation of variables in instruments:

- Measurement variables are visualized in instruments to view and analyze their time traces.
- Calibration parameters are visualized in instruments to change their values.

VPU Abbreviation of *virtual processing unit*. A VPU is part of an offline simulation application in VEOS. Each VPU runs in a separate process of the PC.

VPU is also the generic term for:

- V-ECUs
- Environment VPUs
- Controller VPUs
- Bus VPUs

W

Working data set The data set currently residing in the memory of a platform/device hardware. There can be only one working data set for each calibration platform/device. The working data set is read/write.

Working page Memory area containing the parameters of an ECU or prototyping hardware (memory page). The working page contains the read/write working data set.

If the platform/device also provides a reference page, ControlDesk lets you switch between both pages.

Writable measurement A scalar variable that can be measured and calibrated.

X

XCP Abbreviation of *Universal Measurement and Calibration Protocol*. A protocol that is implemented on electronic control units (ECUs) and provides access to ECUs with measurement and calibration systems (MCS) such as ControlDesk.

XCP is based on the *master-slave principle*:

- The ECU is the slave.
- The measurement and calibration system is the master.

The "X" stands for the physical layers for communication between the ECU and the MCS, such as CAN (Controller Area Network) and Ethernet.

The basic features of XCP are:

- ECU parameter calibration (CAL)
- Synchronous data acquisition (DAQ)
- Synchronous data stimulation (STIM), i.e., for bypassing
- ECU flash programming (PGM)

The XCP protocol was developed by ASAM e.V. (Association for Standardisation of Automation and Measuring Systems e.V.). For the protocol specification, refer to http://www.asam.net.

The following ControlDesk devices support ECUs with an integrated XCP service:

- XCP on CAN device
- XCP on Ethernet device

XCP on CAN device A device that provides access to an ECU with XCP connected to the ControlDesk PC via CAN. Using the XCP on CAN device, you can access the ECU for measurement and calibration purposes via XCP (*Universal Measurement and Calibration Protocol*).

XCP on Ethernet device A device that provides access to an ECU or V-ECU with XCP connected to the ControlDesk PC via Ethernet. The XCP on Ethernet device provides access to the ECU/V-ECU via XCP (*Universal Measurement and Calibration Protocol*) for measurement and calibration purposes.

XIL API EESPort Electrical Error Simulation port (EESPort)

XIL API MAPort platform A platform that provides access to a simulation platform via the ASAM XIL API implementation that is installed on your host PC.

XY Plotter A plotter instrument for displaying signals as functions of other signals.