

Getting Started Guide

Version 3.0 March 2010

The AEgis Technologies Group, Inc.

410 Jan Davis Drive Huntsville, AL 35806 U.S.A. Phone: (256) 922-0802 <u>info@acslx.com</u> <u>www.acslx.com</u>

acsIX Getting Started Guide

Copyright © 2003 - 2010 The AEgis Technologies Group, Inc. All Rights Reserved. Printed in the United States of America.

ACSL, acsIXpress, and PowerBlock are registered trademarks of The AEgis Technologies Group, Inc.

acsIX and acsIXpress are trademarks of The AEgis Technologies Group, Inc.

Microsoft, Windows, Microsoft .NET, and Microsoft Internet Explorer are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

FLEXIm is a registered trademark of Globetrotter Software, Inc., A Macrovision Company

All other brand and product names mentioned herein are the trademarks and registered trademarks of their respective owners.

Information in this document is subject to change without notice. The software described in this document is furnished under a license agreement. The software and this documentation may be used only in accordance with the terms of this agreement.

The AEgis Technologies Group, Inc.

410 Jan Davis Drive Huntsville, AL 35806 U.S.A. Phone: (256) 922-0802 <u>info@acslx.com</u> <u>www.acslx.com</u>

March 2010

Table of Contents

	Product Overview	. 1
2	2.1 System Requirements	. 2 2
	2.1.1 Minimum System Requirements	.2
	2.2 Required 3 rd Party Components	.2
	2.3 Installing acsIX	
	2.4 Additional Information and Updates	
	2.5 Configuration	
	2.5.1 Compiler Support 2.5.2 IDE configuration	.3
	2.5.2 DE configuration	
3		
	3.1 Trial License	6
	3.2 Single User and Multi User License.3.2.1 Requesting and Saving the License Key File for SUL or MUL	.0
	3.3 Floating Network License	
	3.3.1 Requesting and Saving the License Key File for FNL	6
	3.3.2 Setting up the License Server for Floating Network License	
	3.3.3 Setting up the FLEXIm Directory	
	3.3.4 Starting the FLEXIm License Server	.7
		•
4	acsIX Examples	
	4.1 Starting acsIX4.2 Spring Example (CSL language model)	
	4.2 Spring Example (CSL language model)	
		. 12
	Working with acsIX	
5		. 16
5	5.1 Creating a Workspace	. 16
5	5.1 Creating a Workspace5.2 Using the Block Libraries of PowerBlocks	. 16 . 18
5	 5.1 Creating a Workspace 5.2 Using the Block Libraries of PowerBlocks 5.3 Creating a New Block 	. 16 . 18 . 19
5	 5.1 Creating a Workspace	. 16 . 18 . 19 . 22
5	 5.1 Creating a Workspace	. 16 . 18 . 19 . 22 . 23
5	 5.1 Creating a Workspace	. 16 . 18 . 19 . 22 . 23 . 24
5	 5.1 Creating a Workspace	. 16 . 18 . 19 . 22 . 23 . 24
	 5.1 Creating a Workspace	. 16 . 18 . 22 . 23 . 24 . 25
	 5.1 Creating a Workspace	. 16 . 18 . 22 . 23 . 24 . 25 . 27
	 5.1 Creating a Workspace	. 16 . 18 . 22 . 23 . 24 . 25 . 27
	 5.1 Creating a Workspace	. 16 . 18 . 22 . 23 . 24 . 25 . 27 . 27 . 29
6	 5.1 Creating a Workspace 5.2 Using the Block Libraries of PowerBlocks 5.3 Creating a New Block 5.4 Adding Ports 5.5 Setting Constants. 5.6 Wiring the Block Diagram 5.7 Building and Running the Model Flotting 6.1 Creating plots 6.2 Plot Properties 	16 18 19 22 23 24 25 27 27 29

1 Product Overview

acsIX is a modeling, execution, and analysis environment for continuous dynamic systems and processes. Simple to learn and easy to use, acsIX provides an intuitive environment for users at all levels and is versatile and powerful enough to address the most challenging simulation problems.

Ready-to-use code blocks enable quick model assembly, while powerful analysis capabilities provide quick and accurate results. Industry-specific toolkits are tailored to the needs of each customer.

Its flexible, open architecture allows acsIX models to be easily integrated with in-house or third-party applications. acsIX provides both graphical and textoriented model representation environments that give you full visibility and control of your models. With acsIX, you work easily and efficiently to achieve quick and accurate results.

acsIX improves your modeling and simulation productivity through efficient development of powerful modeling applications, easy integration with existing applications and systems, and robust analysis features. Best of all, acsIX helps you present and preserve your findings so you continue to capture value for your work well into the future.

The predecessor to acsIX, ACSL, was one of the first commercially available modeling and simulation languages designed for simulating continuous systems. ACSL has been tested and verified with over 25 years of continuous use by the world's most demanding simulation professionals.

2 Install, Configure, Remove acsIX

2.1 System Requirements

This section lists the hardware and software requirements for installation of acsIX.

2.1.1 Minimum System Requirements

To install and run acsIX, the computer system must meet the following minimum requirements:

Operating System

- Microsoft Vista, Microsoft Windows XP or Microsoft® Windows® 2000
- Latest Windows service pack and critical updates available from Microsoft Windows Update Web page

CPU Requirements

• Pentium 4 @ 2 GHZ or equivalent

Minimum RAM Requirements

• 512 MB (or higher recommended)

Hard Disk

- Hard disk space required to install 300 MB
- Hard disk space required to operate 150 MB

Display

• 1024 x 768, 32 bit color recommended

Network

• Network card required for its unique hostid (MAC address) to enable the licensing system. Computer system does not have to be connected to a network.

Input Device

• Microsoft mouse or compatible pointing device

Other

- Microsoft Internet Explorer® 6.0 or later is required
- Microsoft.NET Framework 1.1 or later is required

2.2 Required 3rd Party Components

acsIX is built on top of Microsoft's .NET framework and thus requires the framework to be installed prior to operation. The installation and version of Microsoft.NET Framework is automatically checked when installing acsIX.

Internet Explorer version 6 or later is also required by acsIX. To download the latest versions visit the <u>www.microsoft.com</u>.

2.3 Installing acsIX

To install acsIX double click on the axsetup_2.5.x.x.exe file that was either downloaded from the acsIX.com website or found on the acsIX CD-ROM.

NOTE: users of Microsoft Windows Vista are strongly encouraged to change the default installation location of acsIX to C:\acsIX in order to avoid difficulties arising from write-protections for the Program Files for standard user accounts.

2.4 Additional Information and Updates

For information about the product, upcoming events and available services please check the acsIX website at <u>www.acsIX.com</u>.

As we are continuously improving acsIX, it is recommended that you check the website often for new releases and updates.

2.5 Configuration

2.5.1 Compiler Support

acsIX provides and installs GNU C as the default compiler. acsIX also supports Visual Studio.NET C++ (v7), Compaq Digital Fortran (v6.5) and Visual Studio C++ (v6) compilers.

To access the acsIX translator options dialog box, choose the **Edit > Options...** menu item in acsIX. Select the **Translator** option. The following dialog box will be displayed.

MacslXtreme Option	S				
Global Options	Configuration:	GNU C (Release)	•		ОК
💼 Block Libraries	C/C++ Compiler F -c -l "C:\acsKtrer	lags: ne'' -o ''\$@'' ''\$<''			Cancel
	Fortran Compiler F	lags:			Apply
	,	:\\acsKtreme\acsItrans.def''-c Directories (semicolon-delimit			
	C/C++ Include File				
	Fortran Include Fil	e Entries:			
	Library Linker En	tries:			
	, Target Language:	© C/C++ C Fortran	Build: 💿 Relea	ase () Debug	
	1	ngw32\bin\mingw32-gcc.exe		Browse	
	Fortran Compiler F C:\acsKtreme\mi Linker Path:	^p ath: ngw32\bin\mingw32-gcc.exe		Browse	
		ngw32\bin\mingw32-gcc.exe		Browse	
			Add New	Configuration	

The default configuration is the GNU C compiler. The paths for this configuration were setup during installation. To choose a different configuration, scroll down the configuration list and choose the desired compiler and confirm that the compiler and linker paths and flags point to the proper locations. GNU C is the only compiler supplied on the distribution CD with acsIX.

acsIX uses the command line version of the supported compilers (VS v6, VS.NET, Compaq Visual Fortran v6.5). Special libraries are required for the command line version and the path to these libraries **are not added** by default when the compilers are installed.

In order to use these specific compiler options, adding the correct path to the system environmental variables may be required. Listed below is the library each compiler requires along with the default path to that library.

Compaq Visual Fortran: MSPDB60.DLL C:\Program Files\Microsoft Visual Studio\Common\MSDEV98\BIN

<u>MS Visual Studio, v6</u>: MSPDB.DLL C:\Program Files\Microsoft Visual Studio\Common\MSDEV98\BIN

<u>MS Visual Studio .NET, v7</u>: MSPDB70.DLL C:\Program Files\Microsoft Visual Studio .NET\Common7\IDE

<u>MS Visual Studio .NET 2003</u>: MSPDB71.DLL C:\Program Files\Microsoft Visual Studio .NET 2003\Common7\IDE See your system administrator for information on how to set system environmental variables.

2.5.2 IDE configuration

acsIX employs a user-friendly Integrated Development Environment (IDE). By the very nature of the application, acsIX is required to manage a large and diverse set of information requiring multiple windows. acsIX's window management and docking capability allows for management of this information in a friendly manner while providing instant access to everything required to design, build, execute and analyze models and simulations. It is important to be familiar with acsIX's docking windows before proceeding with the application.

It is recommended to review the acsIX User's Guide prior to working through the following examples. Please STOP now and review Chapter 2 of the User's Guide. This guide can be found on the installation CD or in the documentation folder of acsIX's installation directory.

Note that acsIX has a default window configuration and this can be customized by the user and will be saved when exiting acsIX.

2.6 Removing acsIX

Always use the **Add or Remove Programs** utility to uninstall the acsIX software and to ensure that all the installed software components are correctly removed. This will also remove the acsIX settings from the Windows Registry.

- 1. To uninstall the software, click Start > Control Panel
- 2. Double-click Add or Remove Programs.
- 3. Select **acsIX** from the list of installed software and select the **Remove** button.

3 Registration and Licensing

acsIX has four different license types: Trial License, Single User License (SUL), Multi User License (MUL), and Floating Network License (FNL). SUL and MUL are controlled through the same licensing process that is described in chapter 3.2.

3.1 Trial License

acsIX is configured with a one-time trial license that will be valid for fourteen (14) days beginning at the time of the initial installation of acsIX.

3.2 Single User and Multi User License

The only step to complete for a Single User or Multi User License is to request a license key file and to place it into the acsIX installation directory (by default C:\Program Files\Aegis Technologies\acsIX).

3.2.1 Requesting and Saving the License Key File for SUL or MUL

Contact License Support via one of the following methods to request a license key file:

E-Mail:

License@AEgisTG.com

Phone:

• (256) 922-0802

Fax:

• (256) 922-0904

3.3 Floating Network License

3.3.1 Requesting and Saving the License Key File for FNL

Contact License Support via one of the following methods to request a license key file:

E-Mail:

License@AEgisTG.com

Phone:

• (256) 922-0802

Fax:

• (256) 922-0904

3.3.2 Setting up the License Server for Floating Network License

The acsIX Floating Network License requires FLEXIm[®] version 8.0 or later to be installed on the license server.

To review information about FLEXIm, see Macrovision® Software's website at:

http://www.macrovision.com

Also, the current version of the FLEXIm End User's Manual can be found in the PDF format on the acsIX installation CD or the latest version can be found at the website listed above.

In the case of a FLEXIm error message, please refer to the FLEXIm End User's Manual for complete explanation.

The acsIX product CD-ROM provides the FLEXIm distribution files to run a License Manager on a Windows 32-bit operating system. The required files are located in a folder called **\FLEXIm Server\i86_n3**.

lmgrd.exe	The license manager daemon
lmtools.exe	GUI based FLEXIm utility program (Windows Version only)
lmutil.exe	Command line based utility program
aegissim.exe	AEgis' vendor daemon

The FLEXIm distribution files consist of the following:

3.3.3 Setting up the FLEXIm Directory

Before beginning this section, determine whether the license server has FLEXIm 8.0 or higher installed. The following instructions apply to both PC and UNIX installations.

1. For a new installation, create a new directory for the FLEXIm files. If a previous installation of FLEXIm 8.0 or higher exists, find the folder on the license server where the Imgrd.exe file is located.

2. Insert the acsIX products CD into the CD-ROM drive and access the CD-ROM drive, and browse to the **\FLEXIm Server\i86_n3** folder.

or

2. Download the the FLEXIm files from the <u>Tech Support Download</u> site.

3. Copy all of the files in **FLEXIm\i86_n3** to the folder created in step 1 on the server. If a previous installation of FLEXIm 8.0 or higher exists, copy only the "aegissim.exe" file from the CD to the folder on the server.

3.3.4 Starting the FLEXIm License Server

Refer to the FLEXIm End User's Manual, Chapter 6, The License Manager Daemon, for detailed instructions on starting the FLEXIm License Server.

4 acsIX Examples

This chapter will demonstrate how to open and run several examples provided with the acsIX software. Multiple example files are located in the **Example** folder located in the installation directory. It is assumed that the user has reviewed Chapter 2 of the acsIX User's Guide.

4.1 Starting acsIX

1. Select Start > Program Files > acsIX > acsIX or click on the acsIX Icon on the desktop 🕅

4.2 Spring Example (CSL language model)

1. After acsIX has started, click on Browse Model Development Examples on the Start Page.



2. Open the Spring folder by double clicking on the folder icon next to the folder name.



3. Select the Workspace file "Spring.aws", then click the **Open** button.

Open			? 🔀
Look <u>i</u> n:	C Spring - Development		* -
🎾 Recent	☐ Spring-bd ☐ Spring-csl ☑ Spring.aws		
Desktop			
My Documents			
My Computer			
S			
My Network Places	File name: Spring.aws	_	Open
	Files of type: Workspace File (*	.aws)	Cancel

4. The tree structure populates with the project and all existing related files. The Spring model contains both a CSL and block diagram model.



5. Double-click on the "Spring.csl" file in the treeview; this will open the file containing the csl code.



6. Click on the Execute menu and choose the Build Project option

<u>53</u>	acslXtreme				
i F	Eile <u>E</u> dit <u>V</u> iew	<u>E</u> xec	cute <u>W</u> indow <u>H</u> elp		
	* 🔊 📑 - 📳	***	Build Project	Ctrl+Shift+B	
	Project Files		Rebuild Project	Ctrl+Shift+R	
	E-Spring		Clean Project	Ctrl+Shift+C	Spring.csl>
0V0	E Spring-	<u>7/</u>	Start	Ctrl+F5	AM spring
Overview	E 🜌 Mo	Þ.	Start/Continue Debug Run	F5	ATIVE
S	E 🐼 Ru	н	Break	Ctrl+B	!sp1
	@	н.	Stop		! mas ! vel
S	⊟ ⊡ 🕅 Plo	1	Reload Simulation		CINTERVAL
Command Hist		Ψī	Step	F11	!def
НБП		Phase		8	CONSTANT
ISI:			ion and Statistics y Files	9	CONSTANT
		Spring		10	Constant

7. Information from the Translation and Build stage can be seen in the **Command Window**.

Command Window	×
rename spring.dll "Spring.dll"	^
C:\acslXtreme\ShSysTime.exe	
Current System Time 09:52:58	
Simulation "C:\acslXtreme\Examples\Model Development\Spring - Development\Spring-c	1
##### Build successful.	-
> 💽 📕 Start Loggi	ng

8. After the Build Successful message is displayed, click on the start icon **!** to execute the simulation.



9. Two plot objects will appear. To view the second plot, click on the non-highlighted **Plot** tab located near the spring-csl tab



Editing the plot window is discussed in more detail in the acsIX User's Guide.

10. Select File > Close Workspace to exit the spring workspace.

4.3 Aircraft Arresting Gear Example (Block Diagram Model)

- 1. Click on Browse Model Analysis Examples on the Start page.
- 2. Select the "Aircraft Arresting Gear" folder.

Open		? 🗙
Look in:	Model Analysis 💌 🗢 🖻 📸 🗐 🗸	
D Recent	CAdvanced PBPK Aircraft Arresting Gear Aspirin - Analysis	6
Desktop	Control Loop Diffusion-Limited Fat PBPK Model PK2 - Analysis	
My Documents	C Spring - Analysis Van der Pol	
My Documents My Computer		
S		
My Network Places		ancel

3. The **Open** window displays:

Open					? 🔀
Look in:	Aircraft Arresting Gear	•	🗢 🗈	📸 🛄 -	
CO Recent	Aircraft Arresting Gear-bd Aircraft Arresting Gear-csl Aircraft Arresting Gear.aws				
Desktop					
My Documents					
My Computer					
S				_	
My Network Places	File name: Aircraft Arresting Gear.aws Files of type: Workspace File (*.aws)			•	Cancel

4. Select the Workspace file "Aircraft Arresting Gear.aws".

5. Click the **Open** button or double-click the icon next to the workspace name. The tree structure populates with the project and all existing related files. This workspace contains both a CSL and a block diagram project.



6. acsIX allows multiple projects in each workspace. The active project is currently Aircraft Arresting Gear-csl, it is highlighted in red. To switch the active project to the block diagram version, right click on Aircraft Arresting Gear-bd and choose **Set As Active Project**.



7. Double click on the "aresting.gmx" file and it will open into the fixed work area.



8. Click on the Execute menu and choose the Build Project option

2	acsiXtreme						
Ē	jile <u>E</u> dit <u>V</u> ie	w <u>E</u> xe	cute	<u>W</u> indow	<u>H</u> elp		_
5	🕈 🔊 🖭 - 🚺	31 🔛	Build	Project		Ctrl+Shift+B	1 : 🚌
1	Project File	2000	Rebu	uild Project		Ctrl+Shift+R	
	🛄 -	Arre	Clear	n Project		Ctrl+Shift+C	
	🖻 🛅 Airc	1.1	Start			Ctrl+F5	
	Ē. 1	Mo	Start	/Continue D	ebug Run	F5	
		≡ Ru II	Brea	k		Ctrl+B	otion
		Re 🔳	Stop				
)		Plo 🔞	Relo	ad Simulatio	n		
		₩ 0p 🗐	Step			F11	
		Tempora					r .
		Arres	-				
		raft Arres Model Fi	_	ear-bd			
		Arres		ear.omx		Water Squeezer	
		Runtime	-				
		🔮 exec	ution_	time.m			
		Results					1
		Plots					• • • •

9. Information from the Translation and Build stage can be seen in the **Command** window.

F Command Window		h >
C:\Program Files\AEgis Technologies\acslXtreme\ShSysTime.exe		^
Current System Time 22:29:52		
"C:\Program Files\&Egis Technologies\acslXtreme\mingw32\bin\mingw32-gcc.exe" -shared	-111	,
rename arrest~1.dll "ArrestingGear.dll"		
C:\Program Files\&Egis Technologies\acslXtreme\ShSysTime.exe		
Current System Time 22:29:53		
Simulation "C:\Program Files\AEgis Technologies\acslXtreme\Examples\Model Analysis\Ai	rer	a
##### Build successful.		
		~
		>
> 📃 🔳 🗮 L	oggin	g Off
Watch Variables S Command Window T Task List		

10. The **Command Window** displays the simulation control prompt. From this command line the user can access and set model variables and run the simulation. Entering `*output T* at the prompt will print out the variable t (time) to the screen while the simulation is running.

Command Window	▼ # ×
C:\Program Files\AEgis Technologies\acslXtreme\ShSysTime.exe	^
Current System Time 22:29:52	
"C:\Program Files\AEgis Technologies\acslXtreme\mingw32\bin\mingw32-gcc.exe" -shared	-W1,
rename arrest~1.dll "ArrestingGear.dll"	
C:\Program Files\AEgis Technologies\acslXtreme\ShSysTime.exe	
Current System Time 22:29:53	
Simulation "C:\Program Files\&Egis Technologies\acslXtreme\Examples\Model &nalysis\&i	rcra
##### Build successful.	~
	>
> output T	.ogging Off
🔎 Watch Variables 📘 Command Window 🔟 Task List	

11. Type '*start*' at the command prompt, or press the $\boxed{2}$ icon to run the simulation. Click on the **Command Window** tab to see the time increment scroll as the simulation runs.



12. Now go to the diagram work area for arestg and double click on the **Plot** block. Select the **Window** > **Cascade** menu item to undock the view and allow the windows to be moved and resized as desired.



13. Click on **File > Close Workspace** to exit the Aircraft Arresting Gear workspace.

5 Working with acsIX

This chapter outlines the basics for maneuvering through acsIX to build and run new models. The following steps will guide the user in the development of a simple harmonic model.

5.1 Creating a Workspace

1. Start acsIX by clicking **Start > Programs > acsIX > acsIX** or click on the **acsIX** icon \aleph on the desktop.

2. On the File menu, select New Workspace. The Project Wizard dialog displays.

Add New Project
Project Types: Blank Project CSL Project Block Diagram Copy Existing Project Project Project
√ Create a new Workspace
New Project Name: Project 1
Location: C:\Program Files\AEgis Technologies\acslXtreme\Example Browse
Project will be created at C:\Program Files\AEgis Technologies\acslXtreme\Examples\Works
OK Cancel

3. Select the **Block Diagram Project** icon and then enter the project name, Harmonic in the Name field. Enter HarmonicWS for the name and path of the desired workspace in the Location field and click OK.

Add New Pro	oject			
Project Types Blank Project	P	Block Diagram Project	Copy Existing Project	
Location: C:	ame: Harmonic \acslXtreme\Exam		s\HarmonicWS\Harmo	<u>B</u> rowse
			ОК	Cancel

4. This will create a workspace (**HarmonicWS**) that contains a block diagram project (**Harmonic**) and model file (**BlockDiagram1.gmx**).



5. Right-clicking on any level in the Project Files tree structure will display actions that apply to that specific level of the tree.

6. Right-click on **BlockDiagram1.gmx** and select **Save**.

7. Right-click on **BlockDiagram1.gmx** and select **Rename** to change the name for the model to **HarmonicBD.gmx**.



8. Double-click on the **HarmonicBD.gmx** file in the tree. The empty block diagram window will open in the **Start Page** work area and is ready for construction of the model.

5.2 Using the Block Libraries of PowerBlocks

1. acsIX has the capability for retractable window views. If the Block Libraries view is retracted, place the mouse cursor over the **Block Libraries** tab that is in the upper right section of the screen; the **Block Libraries** view will appear. Since this will be used to create a model, click on the "pushpin" at the top of the view, this will keep the Libraries open while in use.

_	
~	📰 Block Libraries 🛛 👻 🛨 🗙
	Boolean
	Degradation
	Filters
	Linear Operations
	Math
	Non-Linear
	Backlash

2. In the **Block Libraries** view, click on the **Sources** bar, locate and click on the **Harmonic** block and drag it to the diagram window.

≧IAK∜, ≝≣I@ Z ≻ II = ™, ⊐, Ø,	_	
X Start Page X BlockDiagram1×		= Block Libraries \bullet \pm \times
		Boolean Filters Linear Operations Math Non-Linear Plots Sources
		(Band Inited Noise C = 01 Constant
Harmonic		Gaussian
		Harmonic
Command Window + +>	<	Pulse
T 8 50000		

3. From the **Block Libraries** view, click the **Math** library. Locate, click and drag the **Multiply** block into the diagram window.

4. From the **Block Libraries** view, click the **Plots** library. Click and drag the **Plot** block into the diagram window

5 (집[▲석貞 西콤[@ 카 + □ = 역貞 프貞 ◈ ;			
\leq	🗙 Start Page 🛪 🔛 Block Diagram 1 ×	•	× ^	📰 Block Libraries 🛛 👻 🕈 🗙
				Boolean Filters
				Linear Operations
				Math
				Non-Linear
				Plots
	Harmonic	<u>n n n</u>		Plot
	8× >	a		Plot (Two Input)
		Plot		Plot (Three Input)

5. Click on the "pushpin" to the right of the **Block Libraries** title bar, this will allow the libraries view to retract when not in use.

5.3 Creating a New Block

1. Create a new block by right-clicking in the background of the diagram work area and choosing **New > CSL Block**.



2. Double-click on the **Block** that was just created. This will display the code editor.

Click in the Block Code Editor window, then type the following line: Constant k =
 Exit the code editor window by clicking the X in the upper-right corner of the window.



4. Right click the new **Block** in the diagram and select **Properties**, the **Properties** view containing the properties of the block will appear. All block attributes can be set from the **Properties** view including configuration of the block appearance, name, labels, ports, block type, constants, notes, etc.

🗙 Start Page 🗡 🔛	BlockDiagram1×	
Harmonic	S <mark>X</mark> ⊳	Plot
Car	Edit Run Cut Copy	
	Paste Delete	
	Rotate Block Rotate Image	
	Modify Ports Constants	
	Properties	
_		

5. Click on the **Block Label** in the **Properties** view and change the text from **Block** to **Constant**. Upon pressing enter, the label that appears under the block in the diagram view will change to **Constant**.

🔀 acslXtreme				
<u>File E</u> dit <u>V</u> ie	w <u>E</u> xecute <u>W</u> indow <u>H</u> elp			
🔿 🖎 📑 + 🛙	a 📜 🔊 🤿 🖾 🗠 🗙 🛛	a 🗈 M 🕸 , i 🕮 🗃 (@ 🯹 → 🗉 = 💷 , i 🗂 , i 🛷 ,		
Properties	□ - + >		• ×	~
		Start Page X BlockDiagram1×	• ^	42
Enable Rotation	True			
Enable Rotation	Microsoft Sans Serif, 8pt	4		
Highlight Color	Red			
Shadow	False			
Size	30. 30			
Height	30			
Width	30			
Use Image	False			
Block Data	Faise			
Block Code		Harmonic		
Code	constant k = 5			
Code Type	Csl			
Embed or Link				
File	Linoca			
Path				
Block Label	Constant	Plot		
Block Name	Block 0			
Center Label				
Constants	Block Constant Collection			
Label Placement	Bottom	L		
Ports	Port Collection	Constant		
E Memo				
Author	Conrad Housand			
Created	8/20/2007 12:12 AM			
Description				
Last Modified	8/20/2007 12:12 AM			
Solution Data				
Solution Section	Derivative: Default			-
Block Label	-			×
BIOCK Label	C. D. C. D. C. C.		>	

6. Click on the **Description** field under **Memo** in the **Properties** view and change the description to **Constant Value**.

💥 acslXtreme			
File Edit Viev	w Execute <u>W</u> indow <u>H</u> elp		
	a series and the series of the		
		ⓑⓑ⋈ý, ⊠∞ ? ≻ । = ☜, □, ⊘,	
Properties	🗆 🔻 #	X Start Page X BlockDiagram1×	
2↓ □			
Enable Rotation	True		
Font	Microsoft Sans Serif, 8pt		
Highlight Color	Red		
Shadow	False		
E Size	30, 30		
Height	30		
Width	30		
Use Image	False		
Block Data			
Block Code		Harmonic	
Code	constant k = 5		
Code Type	Csl		
Embed or Link	Embed		
File			
Path		Line Plot	
Block Label	Constant	Plot	
Block Name	Block 0		
Center Label			
Constants	Block Constant Collection	P	
Label Placement	Bottom	L L L	
Ports	Port Collection	Constant	
E Memo			
Author	Conrad Housand		
Created	8/20/2007 12:12 AM		
Description	Constant Value		
Last Modified	8/20/2007 12:12 AM		
Solution Data			
Solution Section	Derivative: Default		
	A considered with the state of the state		
Description			
	of the purpose and/or function of		
this block		Command Window	
Properties	Broject Files		
I Propercies	Project Piles		
Command Hist	torv 🗆 🔻 🕂	X	
southand the			
1			

5.4 Adding Ports

1. To add an output port to the **Constant Block**, right-click on the block, then click **Modify Ports** from the pop-up menu. This displays a dialog box that controls the port assignments and properties.

💥 Start Page 🗡 🔛 B	NockDiagram1×
Harmonic	X Interplet. Plot
Cons	Edit
Cons	Run
	Cut
	Сору
	Paste
	Delete
	Rotate Block
	Rotate Image
	Modify Ports
	Constants •
	Properties
_	

2. Click on the button Add a New Port. A line with default values displays.

3. First, in the **Style** column, click on the text, InputPort, to choose the type of port (input or output) from the drop down list - select **Output**. This initial selection allows the variables that are displayed in the **Variable(s)** column to be filtered by the given type. Now edit the **Variable(s)** column to assign the port to a variable contained in the block code using the pull down selection, choose **k**. In the **Port Name** column type the name of the port, **K**. Click on the **Shape** column to change the shape of the output port to a **Triangle**.

Modify Port Settin	ngs for Block "Block_0"		
Port Name	Variable	Style	Shape
к	k	OutputPort	Triangle
Add a New Port		ОК	Cancel Apply

4. Click the **OK** button. The port displays on the right side of the block.

🗙 Start Page 🗡 🔛 Bloc	kDiagram1×	
Harmonic	≈ ⊳	C Line Plot
Constant		

5.5 Setting Constants

1. Click on the **Harmonic** block to select its properties. In the **Properties** window, click on the **Constants** field, then click on the "..." to the right of the **Constants** field. This will cause the **Block Constant Values** table to be displayed.

Block Constant V	alues			
Name	Value in CSL	Model Override	Current Run Value	
р	0			
tz	0			
w	0			
		ОК	Cancel	
Notes		UK	Cancer	
"Value in CSI " is o	constant's value as four	d in the CSL code		
	is constant value you di		el Itreplaces permane	ently the
	odel. Note any model or			
"Current Run Valu	e" shows you the value	as it is currently set in	the simulation. You m	av edit this

2. Change the **Model Override** of **W** to **1**, Click the **Apply** button and then click the **OK** button. (Refer to the User's Guide for description of CSL Default, Model Override and Run Override values.)

Name	Value in CSL	Model Override	Current Run Value	
p	0			
tz	0			
w	0	1	1	
Notes		ОК	Cancel	

5.6 Wiring the Block Diagram

1. Click and drag a wire from the output port of the **Harmonic** block until it connects to the input port of the **Multiply** block. Repeat this process and wire the remaining ports together. Refer to the picture below for connections.



5.7 Building and Running the Model

1. To build the model, click on the Build icon information is displayed in the **Output** view as the translation and compilation occurs.

Command Window	×
	^
move "C:\PROGRA~1\AEGIST~1\ACSLXT~1\Examples\HARMON~1\Harmonic\blockd~1.xml" ".\blockd~1.ail"	
more "C: YRUGKAY1/AEGIST1/AESIST1/AESIST2/AESIST	
***** Translating All C:\Program Files\AEgis Technologies\acslXtreme\ShSysTime.exe	
Current System Time 00:26:02	
"C:\Program Files\AEgis Technologies\acslXtreme\AcslXSLT.exe" -IN "blockd~1.ail" -OUT "blockd~1.cpp" -XSL "C:\Program Files\AEgis	31
##### Compiling	
C:\Program Files\AEgis Technologies\acslXtreme\ShSysTime.exe	
Current System Time 00:26:02	
"::\Program Files\AEgis Technologies\acslXtreme\mingw32\bin\mingw32-gcc.exe" -c -I "C:\Program Files\AEgis Technologies\acslXtreme	ne'
###### Linking simulation DLL	
C:\Program Files\AEgis Technologies\acslXtreme\ShSysTime.exe	
Current System Time 00:26:02	
"C:\Program Files\AEgis Technologies\acslXtreme\mingw32\bin\mingw32-gcc.exe" -shared -Wl,-dll "C:\Program Files\AEgis Technologies	68'
rename blockd~1.dll "BlockDiagram1.dll"	
C:\Program Files\AEgis Technologies\acslXtreme\ShSysTime.exe	
Current System Time 00:26:02	
Simulation "C:\Program Files\AEgis Technologies\acsIXtreme\Examples\HarmonicWS\Harmonic\BlockDiagram1.dll" loaded.	
##### Build successful.	
	~
<	>
> 📃 📕 Start Lo	gging
🕞 Command Window 🔎 Watch Variables 📝 Task List	

2. To run the model, click on the **Run** icon $\boxed{1}$ located on the toolbar. The progress can also be monitored in the **Output** view. Once the run is complete, double-click on the **Plot** block. The **Plot** displays in a new tab in the workspace.



NOTE: The plot is not saved between work sessions. If the workspace is closed and then later reopened, the plot will need to be recreated after running by clicking on the plot block.

3. From the **File** menu, choose **Close** to close the workspace. At the build step the workspace was automatically saved. If you have made further changes since that point, a dialog box will prompt the user to save the workspace.

4. From the File menu, chose Exit to exit acsIX.

6 Plotting

This chapter shows the basics for creating a plot in the Project File View and then accessing the plot editing tools. For further information on Plotting, see Chapter 5 in the acsIX User's Guide.

6.1 Creating plots

1. Start acsIX by clicking **Start > Programs > acsIX > acsIX** or click on the **acsIX** icon on the desktop

2. Open the "Spring-csl" example (detailed in Section 4.2), then build the model by clicking the **Build** icon

3. In the **Project Files** view, right-click on the **Plots** folder and choose **Add New Plot**.



4. The **Provide name and path for new item** dialog displays. In the **File name** field, type the name of the plot file, **Velocity**. Click the **Open** button.

Provide name	and path for	new item			? 🗙
Look in:	Spring-csl		•	← 🗈 💣 📰•	
Pecent	AX2SL Save Phase Plot.				
Desktop My Documents					
My Computer					
My Network Places	File <u>n</u> ame:	velocity		•	<u>O</u> pen
Fiddes	Files of type:	Plot File (*.adv)		•	Cancel

5. The **Plot Wizard** displays and a new node for the plot appears in the tree view. Follow the prompts. For this example click the **Next** button to choose the default plot type.

🔜 Plot Wizard	
Plot Type Choose the type of plot you wish to use and runtime plotting option	15.
Select the type of plot:	Line (Linear Axes)
Filter the lists of variables which may be plotted: Select the runtime plotting options:	 Show system variables Show dummy variables (e.g., Z99999) Show constants Plot results every time the simulation runs At conclusion of run As the run progresses
When you are finished, click the Next button.	
	Next >> Cancel

6. In the **Data Mapping** dialog box choose the variables you want to plot. In the **Mapped to X** box choose the variable `t' and in the **Mapped to Y** choose the variable `xd'. Click the **Add Mapping** button, and then click the **Next** button. Follow the prompts and click "Finish" to close the **Plot Wizard**

🔜 Plot Wizard		
Data Mapping Create one or more data series for the cu	rrent plot by mapping simulati	ion variables to plot variables.
X-Axis Variable	Y-Axis Variable	▼ Increment
Add Mapping		Delete Selected Mapping
t / xd		
	mapping from this plot, select	"Increment" for 1.2,N) and predd "Add Mapping" to t it in the list and press "Delete Selected Mapping."
		Cancel << Back Finish

7. Click the run icon $\boxed{1}$ and the plots will appear during runtime.

6.2 Plot Properties

1. Double-click on the background of the plot. This will display the **TeeChart Editor Properties** dialog box.

S TeeChart Editor	
Chart Series Data Print Export Tools	Themes
Series Panel Axes General Titles Walls Paging	Legend 3D
ky v − line1	
₩ 🗹 —— line2	<u>A</u> dd
	<u>D</u> elete
	<u>T</u> itle
	Cl <u>o</u> ne
	<u>C</u> hange
Help	Close

2. All the properties for the plots can be set from the plot **Editing** dialog box. Plots and/or data can also be exported in several standard formats.

3. For example; to change the title on the plot, click the **Title** tab and edit the text box. The title on the plot will change as you edit the text.

💊 TeeChart Editor 📃	
Chart Series Data Print Export Tools Themes	
Series Panel Axes General Titles Walls Paging Legend	3D
Title: Header	
Style Position Format Gradient Shadow Text Bevels	
☑ ⊻isible ☑ Adjust Frame Alignment: Center	•
Spring Model	
Help Clos	e

- 4. Close the **Editing** dialog window.
- 5. Close the workspace by using the menu **File > Close Workspace**.
- 6. File > Exit to exit acsIX.

7 Additional Information

7.1 acsIX User's Guide

For detailed information on using acsIX refer to the acsIX User's Guide. The full User's Guide is available in PDF format on the installation CD and in the installation directory under Documentation. It is also available using acsIX's Help function under menu **Help > acsIX Help** and as a Start Page link **'Open the help contents**'.



7.2 Technical Support

Technical Support business hours are Monday through Friday, 9:00 AM to 5:00 PM, Eastern Time (US & Canada).

E-Mail

Questions can be sent directly via e-mail at <u>support@AEgisTG.com</u> to the technical support team.

For Technical Support questions and trouble reports about acsIX, send email to: support@AEgisTG.com

Telephone

For telephone support, call The AEgis Technologies Group during normal business hours Monday through Friday, 9:00 AM to 5:00 PM, Eastern Time (US & Canada) at: (256) 922-0802.

FAX

You can also fax questions directly to the acsIX technical support team. For technical support issues, be sure to list "acsIX Support" as the recipient on the cover page. Fax questions to the following number: (256) 922-0904.