
ME scope

Script (VSL) Window

March 7, 2025



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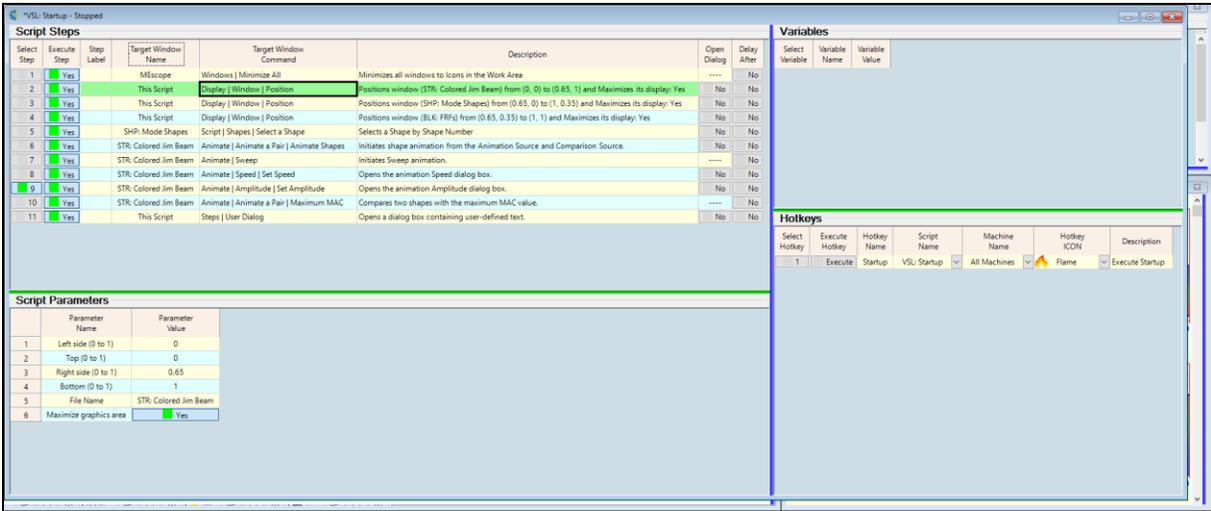
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Script (VSL) Window

This window is used to automate the operation of MEScope.

To enlarge this text, *click* on it, *hold down the Ctrl key* and *spin the mouse wheel*.



Script (VSL) Window.

A Script (VSL) window is divided into *as many as four spreadsheets*, separated by **green** and **blue** splitter bars as shown above

- When the Script is **run**, all Steps in the **Script Steps** spreadsheet **are executed in sequence, from top to bottom**
- A Script is run either by executing a command from its **Run** menu, or by **pressing a Hotkey** that is linked to the Script
- Most commands in MEScope can be added to a Script (VSL) window and executed automatically
- Each MEScope window also has a **Script** menu which contains *special Script commands for that window*

Script (VSL) Window Spreadsheets

A Script (VSL) Window has four spreadsheets,

1. **Script Steps**
2. **Script Parameters**
3. **Variables**
4. **Hotkeys**

Script Steps and Script Parameters Spreadsheets

- Each **row** in the **Script Steps** spreadsheet contains an MEScope command (also called a **Step**)
- Each **Step** executes a Script (VSL) Window **Command** in a window of the *currently open Project*
- If a command requires parameters, they are entering into the **Script Parameters** spreadsheet

Variables & Hotkeys Spreadsheets

Variables and **Hotkeys** spreadsheets are displayed *on the right side* of a Script (VSL) window.

Variables are used to create Scripts with logical statements and program loops in them

- Any Script in a project can access any variable

When a new Script is created, a Hotkey is also defined for it

- **Hotkeys** are displayed on the **Ribbon** or **Toolbar**
- When a **Hotkey is pressed**, its *Script is executed*

Script (VSL) Window Commands

All Script (VSL) window commands are ordered by command menu (*from left to right*), and then by the commands in each menu (*from top to bottom*).

Each menu command is executed by choosing it from its command **menu**, or by *clicking* on it on a Ribbon or on its **Tool** if it is on a **Toolbar**.

Script Menu in Each MEscape Window

Each MEscape window contains extra **Script** commands which are provided in its **Script** menu.

These extra **Script** commands are documented in each MEscape window chapter.

Each **Script** command is executed in the same manner as any other MEscape command.

Script Steps Spreadsheet

- Spreadsheet **columns** can be re-ordered by *dragging & dropping* them into a new position
- *Selected* spreadsheet **rows** can be moved by executing **Edit | Move Steps Up or Down**

Select Step	Execute Step	Step Label	Target Window Name	Target Window Command	Description	Open Dialog	Delay After
1	Yes		MEscope	Windows Minimize All	Minimizes all windows to Icons in the Work Area	----	No
2	Yes		This Script	Display Window Position	Positions window (STR: Colored Jim Beam) from (0, 0) to (0.65, 1) and Maximizes its display: Yes	No	No
3	Yes		This Script	Display Window Position	Positions window (SHP: Mode Shapes) from (0.65, 0) to (1, 0.35) and Maximizes its display: Yes	No	No
4	Yes		This Script	Display Window Position	Positions window (BLK: FRFs) from (0.65, 0.35) to (1, 1) and Maximizes its display: Yes	No	No
5	Yes		SHP: Mode Shapes	Script Shapes Select a Shape	Selects a Shape by Shape Number	No	No
6	Yes		STR: Colored Jim Beam	Animate Animate a Pair Animate Shapes	Initiates shape animation from the Animation Source and Comparison Source.	No	No
7	Yes		STR: Colored Jim Beam	Animate Sweep	Initiates Sweep animation.	----	No
8	Yes		STR: Colored Jim Beam	Animate Speed Set Speed	Opens the animation Speed dialog box.	No	No
9	Yes		STR: Colored Jim Beam	Animate Amplitude Set Amplitude	Opens the animation Amplitude dialog box.	No	No
10	Yes		STR: Colored Jim Beam	Animate Animate a Pair Maximum MAC	Compares two shapes with the maximum MAC value.	----	No
11	Yes		This Script	Steps User Dialog	Opens a dialog box containing user-defined text.	No	No

Script Steps Spreadsheet.

Target Window Name

This column contains the name of the MEscape window where the *current Step* will be executed.

- **Double click** on a cell in this column and choose a **Target Window** from the drop-down list of available windows

Each **Target Window Window must exist in the currently open Project**

If a **new Target Window** is created by a Script Step, Steps using the **Target Window** can be added to Steps that follow the creation of the new window.

Target Window Command

This column contains the command to be executed in the **Target Window** of the *current Step*.

After a **Target Window** is chosen in the **Target Window** Column,

- **Double click** on the adjoining cell in this column and choose a command from the command menu

Select Step

This column is used for *selecting one or more* Steps. Selected steps can be duplicated, cut, copied, deleted, or pasted into a Script (VSL) window.

- Steps are cut & copied into a **Step paste buffer**, and pasted from it into a Script (VSL) window
- **Click** on a **Select Step** button to *select* (green) or *un-select* (gray) the Step

Toggling Step selection

- **Hold down the Ctrl key** and **click on a Select Step** button *to toggle its selection (select or un-select it)*

Selecting a sequence of Steps

- **Click** on the **Select Step** button on the *first Step to select it*
- **Hold down the Shift key** and **click** on the *last Step* in the sequence to *select* all the Steps between the first & last step

Execute Step

Used to execute a **Step** (Execute Step → **Yes**) or skip a **Step** (Execute Step → **No**).

Step Label

Used for labeling a **Step**

Step Labels can be used as **GoTo** parameters by certain Script Commands.

Open Dialog

Used during execution of a Script to open a dialog box for entering parameters for the command in the *current Step*.

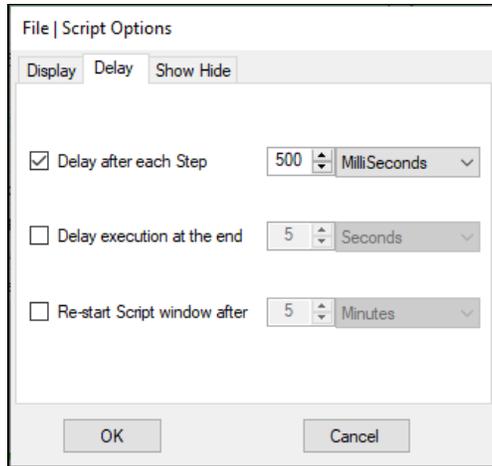
- If **Open Dialog** → **Yes**, a dialog box will open for selecting or entering the parameters required by the command in the *current Step*.
- If **Open Dialog** → **No**, the parameters required by the command *must be entered in the Script Parameters* spreadsheet

Delay After

Used for delaying execution of each Step after the **Step** before it is executed.

The amount of delay (in seconds) is entered on the **Delay** tab in the **File | Script Options** box.

- If **Delay After** → **Yes** is chosen in this column, Step execution will be delayed (in seconds) after the Step has been executed and before the next Step is executed



Script Parameters Spreadsheet

If parameters are required by a Script command, the **Script Parameters** spreadsheet provides **two Columns** for defining each parameter.

Parameter Name

The name of the parameter, which is defined by the command that is *highlighted in the Script Step spreadsheet*.

Parameter Value

The parameter value is user-defined and is saved with the Script (**VSL**) file in the *current Project*.

Script Steps					
Select Step	Execute Step	Step Label	Target Window Name	Target Window Command	Description
1	Yes		MEscope	Windows Minimize All	Minimizes all windows to Icons in the Work Area
2	Yes		This Script	Display Window Position	Positions window (STR: Colored Jim Beam) from (0, 0) to (0.65, 1) and Maximizes its display: Yes
3	Yes		This Script	Display Window Position	Positions window (SHP: Mode Shapes) from (0.65, 0) to (1, 0.35) and Maximizes its display: Yes
4	Yes		This Script	Display Window Position	Positions window (BLK: FRFs) from (0.65, 0.35) to (1, 1) and Maximizes its display: Yes
5	Yes		SHP: Mode Shapes	Script Shapes Select a Shape	Selects a Shape by Shape Number
6	Yes		STR: Colored Jim Beam	Animate Animate a Pair Animate Shapes	Initiates shape animation from the Animation Source and Comparison Source.
7	Yes		STR: Colored Jim Beam	Animate Sweep	Initiates Sweep animation.
8	Yes		STR: Colored Jim Beam	Animate Speed Set Speed	Opens the animation Speed dialog box.
9	Yes		STR: Colored Jim Beam	Animate Amplitude Set Amplitude	Opens the animation Amplitude dialog box.
10	Yes		STR: Colored Jim Beam	Animate Animate a Pair Maximum MAC	Compares two shapes with the maximum MAC value.
11	Yes		This Script	Steps User Dialog	Opens a dialog box containing user-defined text.

Script Parameters		
	Parameter Name	Parameter Value
1	Left side (0 to 1)	0
2	Top (0 to 1)	0
3	Right side (0 to 1)	0.65
4	Bottom (0 to 1)	1
5	File Name	STR: Colored Jim Beam
6	Maximize graphics area	Yes

Script Parameters for the Display | Window Position Command in This Script.

Hotkeys

When a new Script (**VSL**) window is *created & saved in the current Project*, a **Hotkey** is created for that Script.

- Each **Hotkey** is displayed on the MEscope **Ribbon** or **Menu Bar**
- When a **Hotkey** is *pressed*, the Script referenced by the **Hotkey** will be executed
- A **Hotkey** can also be created by executing **Script | Define Hotkeys** followed by the **Edit | Add** command

Select Hotkey	Execute Hotkey	Hotkey Name	Script Name	Machine Name	Hotkey ICON	Description
	Execute	Auto Spectra Versus TRNs	VSL: TRN Versus APS	All Machines	1	Execute TRN Versus APS
2	Execute	Calculate ODS-FRFs	VSL: Calculate ODS-FRFs	All Machines	2	Execute Calculate ODS FRFs
3	Execute	Overlay the Reference Auto Spectra	VSL: Reference Auto Spectra	All Machines	3	Execute Reference Auto Spectra
4	Execute	Re-Scale the ODS-FRFs	VSL: Scaled ODS-FRFs	All Machines	4	Execute Scaled ODS FRFs
5	Execute	Display a Frequency-Based ODS	VSL: Animate ODS's	All Machines	5	Execute Animate ODS's
6	Execute	Review Steps	VSL: Review Steps	All Machines	6	Execute Review Steps

Script | Define Hotkeys Spreadsheet.

Opening a Script (VSL) Window From its Hotkey

- **Hold down the Ctrl key** and **press a Hotkey** to open its Script (VSL) window
- Or **press and hold a Hotkey** to open its Script (VSL) window

Hotkeys in Console

When a **Hotkey** is assigned to a Machine, Site or Test Article in the Archival Database, that **Hotkey** is also displayed for that Machine, Site, or Article on the **Hotkeys** Ribbon in Console.

- By pressing **Hotkeys** in Console, an operator can remotely execute Scripts in MEscape

Scripts Executing Other Scripts

Each Script can run other Scripts. This allows you to break up a large Script into a series of smaller Scripts.

To run another Script from a Script,

- Choose the Script (VSL) window in the **Target Window Name** column of the **Script Steps** spreadsheet
- Choose **Run | Run Once** in the **Target Window Command** column of the **Script Steps** spreadsheet

Script Variables

Scripts can share Variables. Variables are defined with the **Script | Define Variables** command.

Using Variables and the commands in the **Script | Variables** menu is more advanced, but Variables are very useful when you need them.

Tips for Writing Scripts

Writing a Script is like designing and creating a structure model.

It takes a little practice to write Scripts efficiently.

Below is a list of helpful habits to use in writing a Script

1. Decide how many separate functions you want to perform with MEscape, one per Script
2. Execute **File | New | Script** to create a Script followed by **File | Save Script** to save it
3. **Hold down the Ctrl key** and **press its Hotkey** to open the Script (VSL) window
4. Execute **Edit | Insert Selected Steps** and start adding Script Steps to the Script (VSL) window

Helpful Script Steps

A *helpful command* to add at the beginning of each Script is **MEscope → Windows | Minimize All**

- This command clears the MEscope Work Area of windows

A *second helpful command* to add to a Script is **This Script → Script | Window | Position**

- This command opens and positions an MEscope window in the Work Area
- Usually several of these Script Steps are necessary to position all the windows associated with the Script

Debugging a Script

1. Add a command to the Script
2. **Press** its **Hotkey** to execute the Script with the new command in it
3. **Hold down the Ctrl key** and **press** the **Hotkey again** to edit the command or add another command

Script (VSL) Window Mouse & Keyboard Operations

Double-Click in a Spreadsheet Cell

- **Double-click** on a **Target Window Name** cell to display a list of available **Target Windows**
- **Double-click** on a **Target Window Command** cell to display a menu of available commands for the chosen **Target Window**

Re-Ordering Spreadsheet Columns

- **Click & drag** the **column header** to move a spreadsheet column to a new position

Spreadsheet Vertical Scrolling

When a **vertical scroll bar** is displayed on the **right side** of a spreadsheet,

- **Click** on the spreadsheet and **spin the mouse wheel** to **scroll** the spreadsheet vertically

Spreadsheet Text Size

To change the text size in a spreadsheet,

- **Click** on the spreadsheet, **hold down the Ctrl key**, and **spin the mouse wheel**

File Menu

File | Save Script

Saves the Script (VSL) window file in the **currently open** Project file on disk.

File | Save Script As

Saves the Script (VSL) window file with a **new name** in the **currently open** Project file on disk.

File | Copy to Clipboard Menu

These commands copy either the **Script Steps** spreadsheet or the **Script Parameters** spreadsheet to the Windows Clipboard.

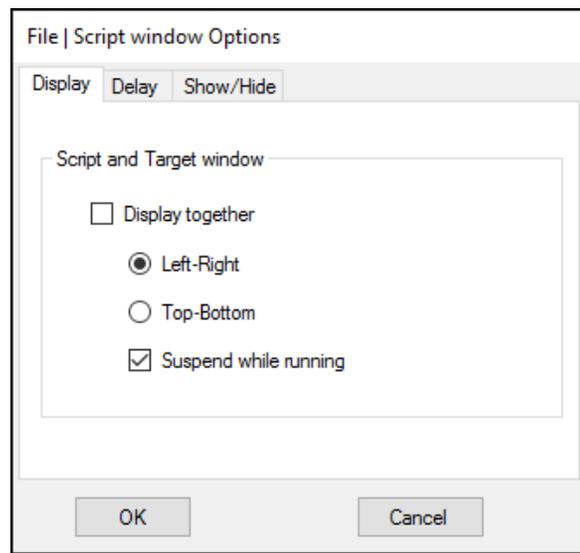
File | Print Menu

These commands print either the **Script Steps** spreadsheet or the **Script Parameters** spreadsheet on the attached Printer.

The installed Windows printer must be a graphics printer to use these Commands

File | Script Options

Opens the Script (VSL) window Options dialog box, where different options can be chosen for the Script (VSL) window.

**Display Tab**

- If **Display Together** is *checked*, when a Step is *clicked on*, its Script (VSL) Window is displayed next to the Script (VSL) window
- If **Suspend while running** is *checked*, the Script (VSL) Window will not be displayed when the Script (VSL) window is executing Steps

Delay Tab

- If **Delay after each Step** is *checked*, execution is delayed *after each Step* by this amount of time
- If **Delay execution at the end** is *checked* and **Run | Run Continuous** is executed, execution is delayed by this amount of time before starting execution at the beginning
- If **Re-start Script after Delay** is *checked*, execution is re-started after this amount of time

Show Hide Tab

All columns in a Script (VSL) window (except the **Select Step** or **Select Parameter** column) can be hidden or shown

- **Right click** on a spreadsheet and execute **Show Hide Columns** to open the **File | Script Options** box
- On the **Show Hide** tab, *check* columns to show them, *un-check* columns to hide them

File | Close Script Window

Closes the Script (VSL) window.

Any window can also be closed by *clicking* on the close button  in the *upper right corner* of the window

Opening a Script (VSL) Window

To open a Script (VSL) window in the Work Area,

- **Double click** on the window name in either pane of the **Current Project Panel**
- Or **right click** on the window name in either pane of the **Current Project Panel**, and execute **Open** from the menu

Display Menu

Display / Center Script Window

Centers the Script (**VSL**) window in the Work Area.

Display / Script Toolbar

Hides or shows the Script Commands Toolbar.

Display / Split

Arranges the display of the **Script Steps** spreadsheet and **Script Parameters** spreadsheet either *vertically* or *horizontally*.

Display / Variables Hotkeys

Hide or shows the Variables and Hotkeys in a Script (**VSL**) window.

Display / Script Parameters

Hides or shows the **Script Parameters** spreadsheet.

Display / Window / Position

Places a window in a specific position in the Work Area.

Parameters

- **Left side** (0 to 1), percentage of the Work Area
- **Top** (0 to 1), percentage of the Work Area
- **Right side** (0 to 1), percentage of the Work Area
- **Bottom** (0 to 1), percentage of the Work Area
- The **File name** of the window to Position

Display / Window / Minimize

Minimizes a window (changes it to an **Icon**) in the Work Area.

Parameter

- **Name** of the window to minimize.

Display / Window / Restore

Restores a window from its *minimized* state in the Work Area.

Parameter

- **Name** of the window to restore.

Display / Window / Maximize

Maximizes a window in the Work Area.

Parameter

- **Name** of the window to maximize in the Work Area.

Display / Window / Bring to the Front

Displays a window in front of all other windows in the Work area.

Parameter

- **Name** of the window to bring to the front on all other windows in the Work Area

Display / Window / Send to the Back

Displays a window behind all other windows in the Work Area.

Parameter

- **Name** of the window to place behind all other windows in the Work Area.

Display / Window / Close All Other Windows

Closes all open windows in the MEScope Work Area except the Script (VSL) Window.

Display / Window / Minimize All Other Windows

Minimizes all open windows in the Work Area except the Script (VSL) Window.

Display / Window / Minimize All Windows but These

Minimizes all open windows in the Work Area except up to four windows chosen as parameters.

Parameters

- First Window name
- Second Window name
- Third Window name
- Fourth Window name

Edit Menu***Edit / Undo***

Restores the Script (VSL) window to the state it was in *before* the *last* editing operation.

- This command can be used repeatedly to undo the last N operations, **N → Number of edits saved**

The Number of edits saved is changed on the **General** tab in the **Project | MEScope Options** dialog box

Edit / Redo

Restores the Script (VSL) window to the state it was in *before* the *last execution* of the **Edit | Undo** command.

Edit / Select Steps / Select All

Selects all Script Steps.

Edit / Select Steps / Invert Selection

Inverts the Script Step selection.

- All *selected* Steps are *un-selected*, and all *un-selected* Steps are *selected*

Edit / Select Steps / Select None

Un-selects all Script Steps.

Edit / Cut selected Steps

Removes the *selected* Steps and puts them into the **Step Paste Buffer**.

Edit / Copy selected Steps

Copies the *selected* Steps into the **Step Paste Buffer**.

Edit / Paste Steps

Pastes Steps from the **Step Paste Buffer** into the **Script Steps** spreadsheet following the *last selected* Step.

Edit / Insert selected Steps

Inserts the *selected* Steps into the Script Steps spreadsheet following the *last selected* Step.

- All Steps are then *un-selected*, and the inserted Steps are *selected*
- If no Steps are *selected*, the *last* Step is *duplicated* at the end of the Script

Delete selected Steps

Deletes (removes) all *selected* Steps from the **Script Steps** spreadsheet.

Edit / Move Selected Steps Up or Down

These two commands move the *selected* Steps either up or down in the **Script Steps** spreadsheet.

Edit / All Window Commands

Adds *all the commands* of a Script (VSL) Window to the Script Steps spreadsheet.

- A dialog box will open from which a Script (VSL) Window type can be chosen.

This command is convenient for *listing the Descriptions* of *all commands* of a **Target Window** in a Script (VSL) Window.

Run Menu

These commands execute Steps in the **Script Steps** spreadsheet in sequence from the *top to the bottom*.

- Steps with **Execute Step → No** are not executed

Run / Run Once

Executes *all Steps* in sequence, starting with the *first Step* and stopping after execution of the *last Step* in the **Script Steps** spreadsheet.

Run / Run Continuous

Executes *all Steps* in sequence starting with the *first Step* and stopping after execution of the *last Step* in the **Script Steps** spreadsheet

- After the *last Step* is executed, execution continues starting at the *first Step*

Run / Stop

Stops execution of Script (VSL) window Steps.

Run / Continue

Executes *all Steps* in sequence, starting from the *current Step* and stopping after execution of the *last Step* in the **Script Steps** spreadsheet.

Run / Continue to Selected Step

Executes *all Steps* in sequence, starting from the *current Step* and stopping after execution of the *first selected Step* in the **Script Steps** spreadsheet.

Run / Single Step

Executes the *current Step* in the **Script Steps** spreadsheet.

Script Running Banner

When a Script is executing Steps, this banner is displayed on the Toolbar, as shown below.



Script Running Banner

Stopping All Script Execution

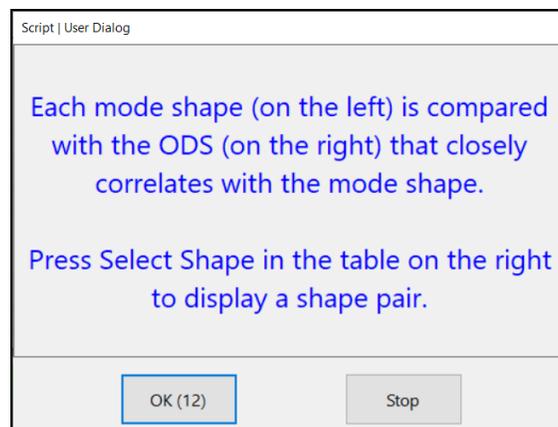
- Press the **red Stop Sign** button to stop Step execution in *all* Script (VSL) windows

Steps Menu

Steps / User Dialog

Opens a dialog box containing a user-specified message, as shown below.

- If the **OK** button is *pressed*, Script execution will continue on the following Step
- If the *countdown time* on the OK button expires, Script execution will continue on the following Step
- If the **Stop** button is *pressed*, Script execution is stopped



Steps / GoTo Step

Script execution branches to the **Step number** or **Label** and continues executing Steps.

Steps / Question Box

Opens a dialog box containing two user-specified messages, plus **Yes**, **No** & **Cancel** buttons.

- The **Yes** & **No** buttons can each have a *user-defined* text message associated with them
- If **Yes** is *pressed*, Step execution branches to the **Yes** label
- If **No** is *pressed*, Step execution branches to the **No** label
- If **Cancel** is *pressed*, Step execution is stopped

Parameters

- Question for the **Yes** button
- Go to this Step or Label if **Yes** is *pressed*
- Additional Message
- Go to this Step or Label if **No** is *pressed*
- Default *pressed* button
- **Yes No pressed Variable** (Yes → 1, No → 0)

Steps / Sleep

Causes execution of Steps to pause on the *current Step* for a user-specified period (in seconds).

Steps / Speech

Plays a user-provided sound.

Steps / Beep

Plays a beep sound.

Steps / Exit Script

Stops Step execution in the *current* Script (VSL) window

- If Step execution was begun from another Script (VSL) window, returns to the next step in that Script (VSL) window

Variables Menu

Variables / Variable 1 = Variable 2

Assigns the contents of Variable 2 to Variable 1

Each Variable can be a Variable name, a number, or text.

Any Script (VSL) window command can reference a Variable in the current Project.

All Variables are listed in a drop-down list *for any Step parameter* that can accept a Variable.

Variables / $Var\ 1 = Var\ 2$ [operator] $Var\ 3$

Assigns the result of the operation between Variable 2 and Variable 3 to Variable 1.

- **[operator]** can be one of the following operations

[+] add

Adds Variable 2 to Variable 3 and stores the result in Variable 1.

[-] subtract

Subtracts Variable 3 from Variable 2 and stores the result in Variable 1.

[x] multiply

Multiplies Variable 2 by Variable 3 and stores the result in Variable 1.

[/] divide

Divides Variable 2 by Variable 3 and stores the result in Variable 1.

Variables / If (Var 1 [compare] Var 2) Then GoTo Step

Compares the value of Variable 1 with Variable 2 and either goes to a Step or Label, or continues execution on the next Step

- Step can be either a **Step number** or a **Step Label**
- If the outcome of **[compare]** → **TRUE**, execution branches to the **Step or Label** and continues executing Steps
- If the outcome of **[compare]** → **FALSE**, continues execution on the next Step
- **[compare]** can be one of the following comparisons

[=] equal to

If Variable 1 *equals* Variable 2, Step execution branches to the Step or Label and continues executing Steps

[<>] not equal to

If Variable 1 *is not equal to* Variable 2, Step execution branches to the Step or Label and continues executing Steps

[<] less than

If Variable 1 *is less than* Variable 2, Step execution branches to the Step or Label and continues executing Steps

[<=] less than or equal to

If Variable 1 *is less than or equal to* Variable 2, Step execution branches to the Step or Label and continues executing Steps

[>] greater than

If Variable 1 *is greater than* Variable 2, Step execution branches to the Step or Label and continues executing Steps

[>=] greater than or equal to

If Variable 1 *is greater than or equal to* Variable 2, Step execution branches to the Step or Label and continues executing Steps

Variables / If (Var 1 [compare] Var 2) Then GoTo Step 1 Else GoTo Step 2

Compares the value of Variable 1 with Variable 2 and either goes to a Step 1 or goes to a Step 2.

- Step 1 & Step 2 can be either a **Step number** or a **Step Label**
- If the outcome of **[compare]** → **TRUE**, Step execution branches to the **Step 1** and continues executing Steps

- If the outcome of **[compare]** → **FALSE**, Step execution branches to the **Step 2** and continues executing Steps
- The **[compare]** operators are the same as those in **Variables | If (Var 1 [compare] Var 2) Then GoTo Step**

Variables / Set Variable

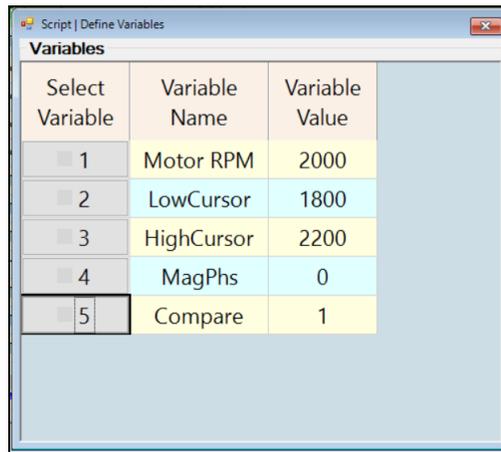
Used to set the *value* for a **Script** Variable.

Parameters

- Variable name
- Variable value (number or text)

Variables / Define Variables

Opens the Variable window, as shown below, where Variables are defined.



The screenshot shows a window titled "Script | Define Variables" with a sub-header "Variables". It contains a table with three columns: "Select Variable", "Variable Name", and "Variable Value". The table lists five variables:

Select Variable	Variable Name	Variable Value
<input type="checkbox"/> 1	Motor RPM	2000
<input type="checkbox"/> 2	LowCursor	1800
<input type="checkbox"/> 3	HighCursor	2200
<input type="checkbox"/> 4	MagPhs	0
<input type="checkbox"/> 5	Compare	1

Variables Window