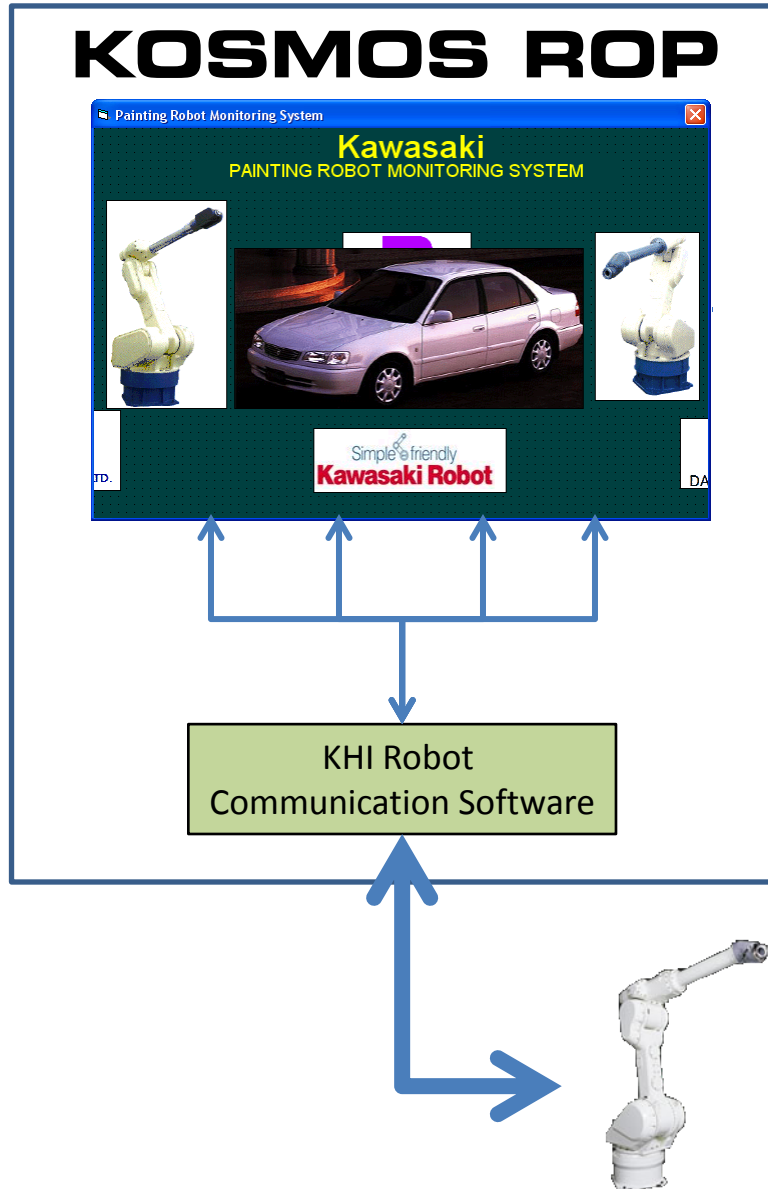


PRISM Software

BACKGROUND



KOSMOS is comprised of 40+ individual programs.

KOSMOS has 4 programs that talk to the robot.

- Teaching Data (Robot Program Editor)
- Parameter (Robot Parameter Editor)
- Management (Robot Program Management)
- Save / Load (Robot Data Backup / Restore)

KOSMOS does not talk directly to the robot.

- KOSMOS talks to a KHI robot communications program.
- KHI robot communications program talks to the robot.

KOSMOS communication faults occur in KHI software.

- As PCs get faster, communication faults get worse.
- All KOSMOS installations are experiencing the same faults.

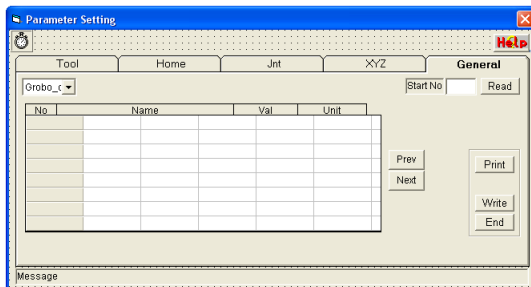
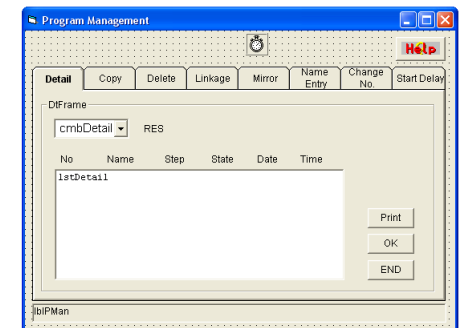
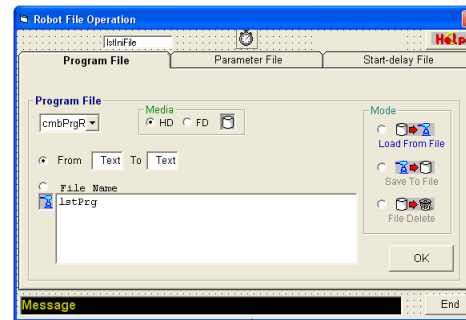
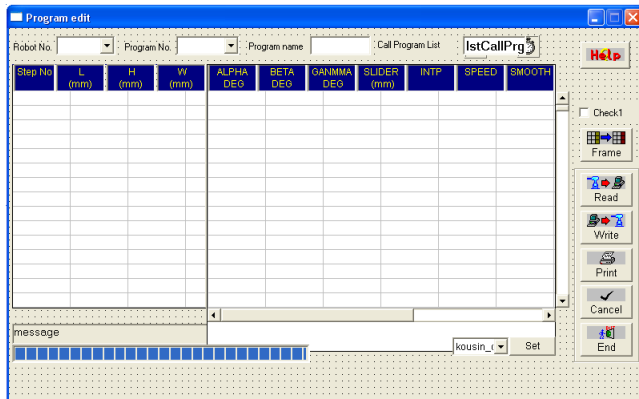
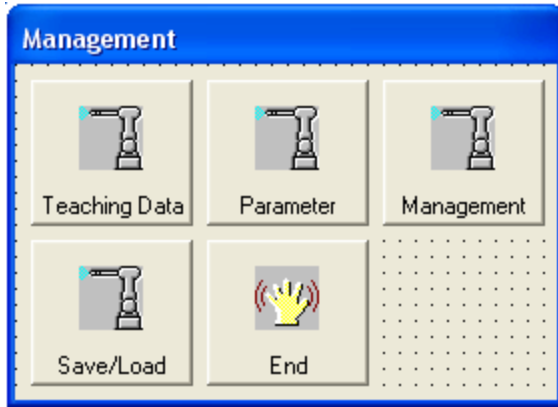
It is NOT possible to fix problems with KHI software.

- KHI software must be replaced.
- KOSMOS programs that use the KHI software must change.
- Easier to replace KOSMOS programs than change them.

PRISM replaces the KHI communication software and the 4 KOSMOS programs that use it into a single modern and supportable software package.

BACKGROUND

PRISM replaces the 4 KOSMOS Robot Management programs.



PRISM

A Tools View Windows Help

B 1ST3L:PRG70 Actions Log 1ST3L:PARAMS 1ST3R:PRG75 Abort All Done

C PRISM Explorer

PRISM Program Editor 1ST3L: * PRG70 [202 SUV]

Editor Program Help

Read Write Load Save Save As Undo Redo Clear Frame Print Abort Close

1ST3L: * PRG70 [202 SUV] From Robot

STEP	LENGTH mm	HEIGHT mm	WIDTH mm	ALPHA DEG	BETA DEG	GAMMA DEG	SLIDER (mm)	INTP LATE	SPEED	SMOOTH LEVEL
1	-2564.50	-1964.50	771.10	0.93	-178.98	1.36	-850.00	JOINT	50	
2	-2586.60	-1847.40	771.90	0.95	-178.87	1.31	-850.00	JOINT	50	
3	-2586.00	-1646.40	771.90	0.94	-178.89	1.31	-850.00	JOINT	50	
4	-2153.50	-1253.30	787.30	0.95	-178.87	1.31	-850.00	LINEAR	1100	
5	-1879.20	-890.40	1209.40	1.44	179.96	-34.88	-850.00	LINEAR	1100	
6	-455.10	-704.10	1258.60	2.84	108.07	4.54	-600.00	JOINT	90	
7	171.20	-830.60	1315.80	3.23	107.82	-17.57	-600.00	LINEAR	1100	
8	3.90	-839.30	1829.70	2.82	108.07	4.52	-600.00	LINEAR	650	
9	-16.00	-850.10	2303.20	2.82	108.07	4.53	-550.00	LINEAR	650	
10	-18.60	-777.20	2303.00	2.82	108.07	4.53	-600.00	LINEAR	600	
11	-8.90	-772.50	1829.90	2.82	108.08	4.52	-600.00	LINEAR	650	
12	179.70	-743.50	1315.50	2.82	108.07	-17.16	-600.00	LINEAR	650	
13	35.80	-725.90	1757.70	2.82	108.07	4.53	-600.00	LINEAR	600	
14	91.00	-534.50	1760.40	2.82	108.07	4.53	-600.00	LINEAR	650	
15	138.10	-566.30	1652.10	2.82	108.07	4.53	-600.00	LINEAR	600	
16	62.70	-720.20	1652.40	2.82	108.07	4.53	-600.00	LINEAR	650	
17	...	...	...	...	...	...	...	...	...	...
18	-475.30	-545.00	1419.30	...	...	...	...	...	...	...

Maintain Angle of Length Axis to Slider Axis 1.50

D Backup Completed Successfully 00:25:58 09:12:07 PM

A PRISM Menu Bar

B PRISM Activity Bar

C PRISM Explorer Pane

D PRISM Status Bar

E PRISM Workspace

PRISM

All PRISM windows and dialogs can be resized by dragging the edge of the window bigger or smaller.

Most things in the PRISM software provide a tooltip message if the mouse is hovered over it.

Most actions are initiated from the PRISM Explorer Pane by right clicking an object to display its context menu.

Most actions initiated from the PRISM Explorer Pane can be performed on multiple objects at the same time by selecting multiple objects.

Most actions have a keyboard accelerator. The keyboard accelerator will be displayed on each menu option or toolbar tooltip.

Most actions display a confirmation message before proceeding. The message provides several choices.

- Yes To All - answers Yes to the current confirmation, and automatically assumes Yes for all subsequent confirmations.

- Yes - continues the current action for the current object. Any subsequent confirmations will still be asked.

- No - stops the action for the current object. All confirmations will still be asked for subsequent objects.

- No To All - answer No to the current confirmation, and automatically assumes No for all subsequent confirmations.

- Cancel - stops the action for the current object and for all subsequent objects.

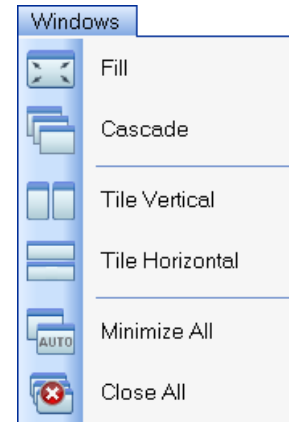
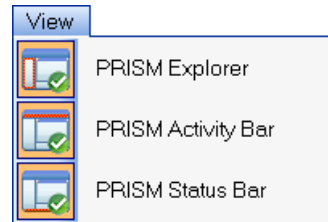
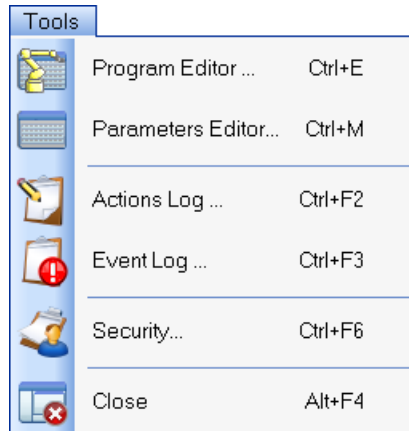
Any action that modifies data will be logged to the PRISM Actions Log, ensuring all modifications are tracked and undone.

Any action that modifies data requires a PRISM User Account, ensuring all modifications are traceable.

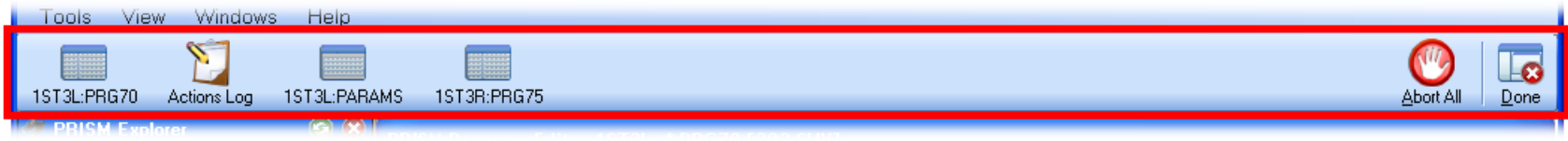
Any unexpected behavior anywhere within PRISM will be logged with the PRISM Event Log, ensuring all failures are captured.

Pressing any Abort button will safely and cleanly halt all current communication with all robots.

PRISM Menu Bar

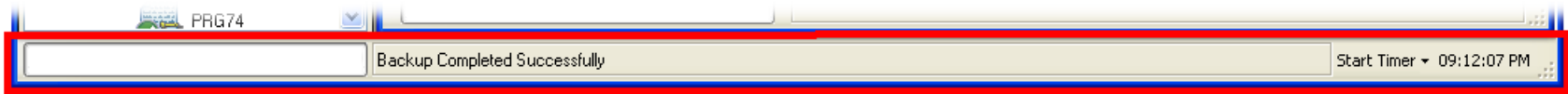


PRISM Activity Bar



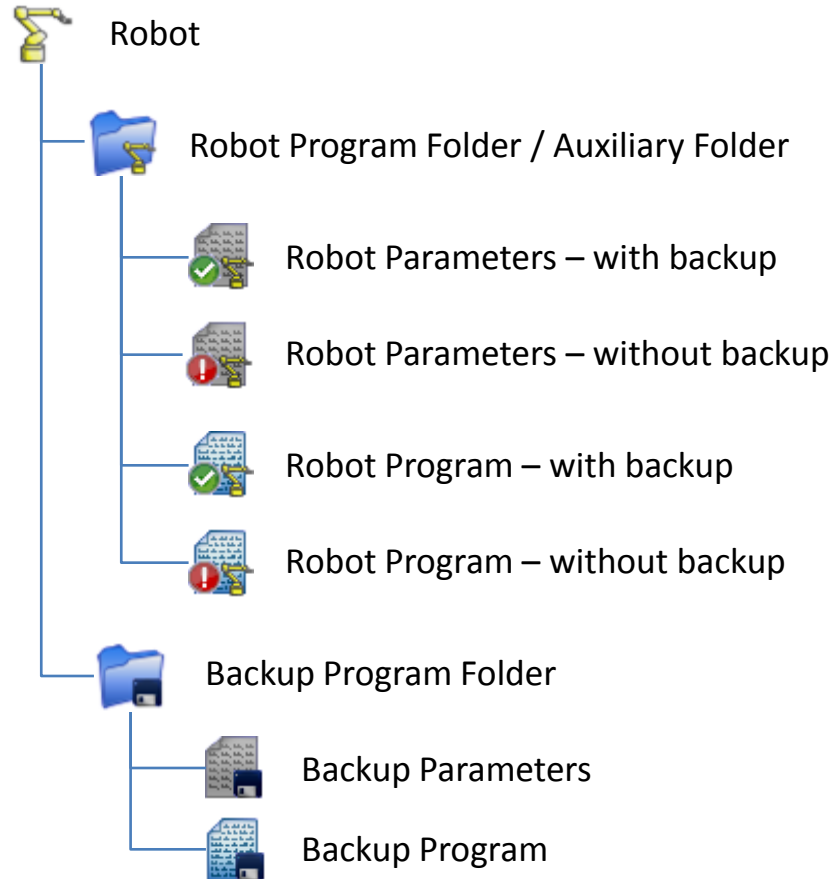
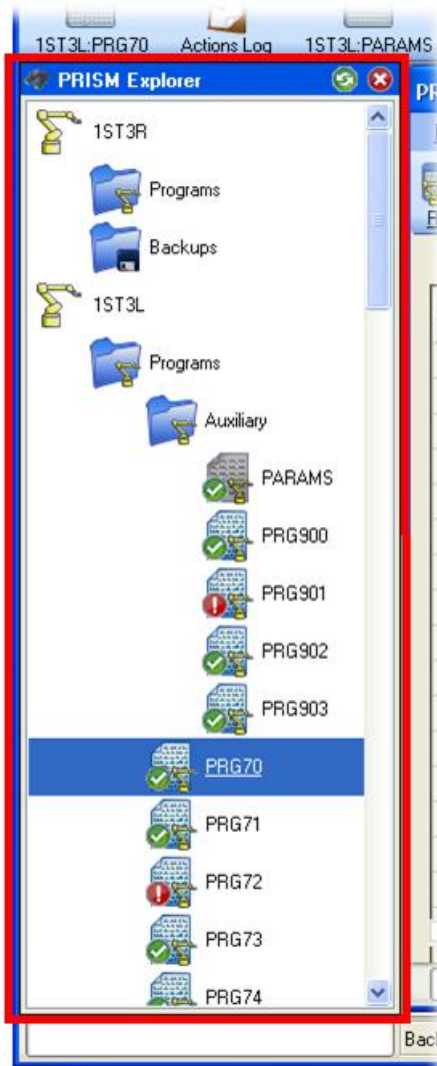
- Right clicking on the PRISM Activity Bar displays the Activity Bar Context Menu.

PRISM Status Bar



- The Progress Meter and Action Status fields track communication activity initiated by the PRISM Explorer Pane.
- Each PRISM window that communicates with robots will have its own progress meter and action status.
- Clicking the small arrow to the immediate right of the Start Timer button displays the Start Timer menu.

PRISM Explorer Pane



- Hovering the mouse over an icon will display a tooltip for that icon.
- A green checkmark means the program or parameters are backed up.
- A red exclamation point means the backup is outdated or missing.
- Right click on an Icon to display the commands menu for that icon.

PRISM Explorer Pane

Startup

If communication cannot be established with one or more robots, the PRISM Explorer Pane will display a message noting the failure.

Each time the PRISM software is started the PRISM Explorer Pane will initiate communication with all robots and request from each their current programs list. Progress of the request can be seen on the PRISM Status Bar as it monitors each robot's response.

Each time the PRISM software is started the PRISM Explorer Pane immediately displays the list of robot program, parameters and backup files as they existed when PRISM was last shutdown. Because it can take many seconds for the robots to respond with their current programs list, immediately displaying the last known list of programs allows work to begin in PRISM before the current list has been fully received.

Navigation

Select icons by clicking on them.

Clicking a robot icon, or one of the folder icons will expand or collapse the icon.

Use the Shift and Ctrl keys to select multiple icons.

- Holding the Shift key will select all icons between the current icon and the clicked icon.

- Holding the Ctrl key will select the current icon without deselecting other icons.

Use the arrow keys to select the next or previous icon.

Use the Enter key to expand or collapse robot and folder icons.

Context menus will only be displayed if the PRISM Explorer Pane is not currently executing a command.

Execution

Execute icon commands by using their context menus.

- Right click on an icon to show its context menu.

- Press the spacebar to the selected icon's context menu.

If multiple icons of the same type are selected then the context for that type of icon will be shown.

If multiple icons of different types are selected then no context menu will be shown.

All modifications must provide a valid PRISM User Account before proceeding.

All activity is recorded in the PRISM Action Log for the provided user account.

Each time the PRISM Explorer Panel executes a command it displays an action panel to track the command.

PRISM Explorer Pane

Action Panel

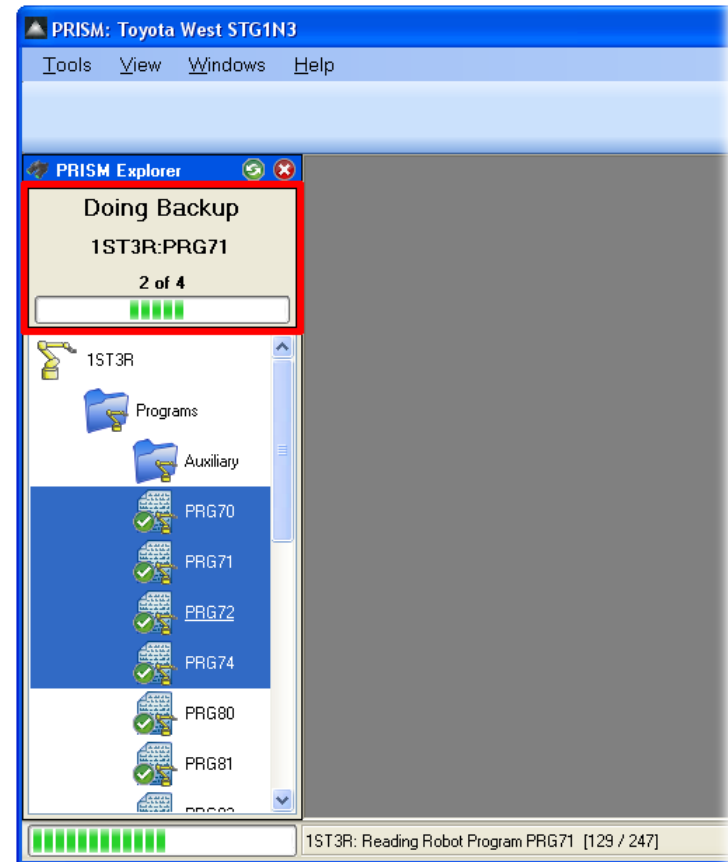
The action panel is displayed at the top of the PRISM Explorer Pane each time a command is executed.

The action panel displays the progress of the command being executed, which can be a lengthy operation involving multiple objects in the PRISM Explorer Pane.

The action panel displays the action being performed, the object on which the action is being performed, on how many more objects the action will be performed, and a marquee progress meter.

The marquee progress meter scrolls continuously while the action is being performed. The marquee does not indicate command progress, but only that command is still being executed. Command progress is tracked by the progress meter on the PRISM Status Bar at the bottom of the PRISM Window.

When the command is complete the action panel is automatically removed from the pane.



Toolbar

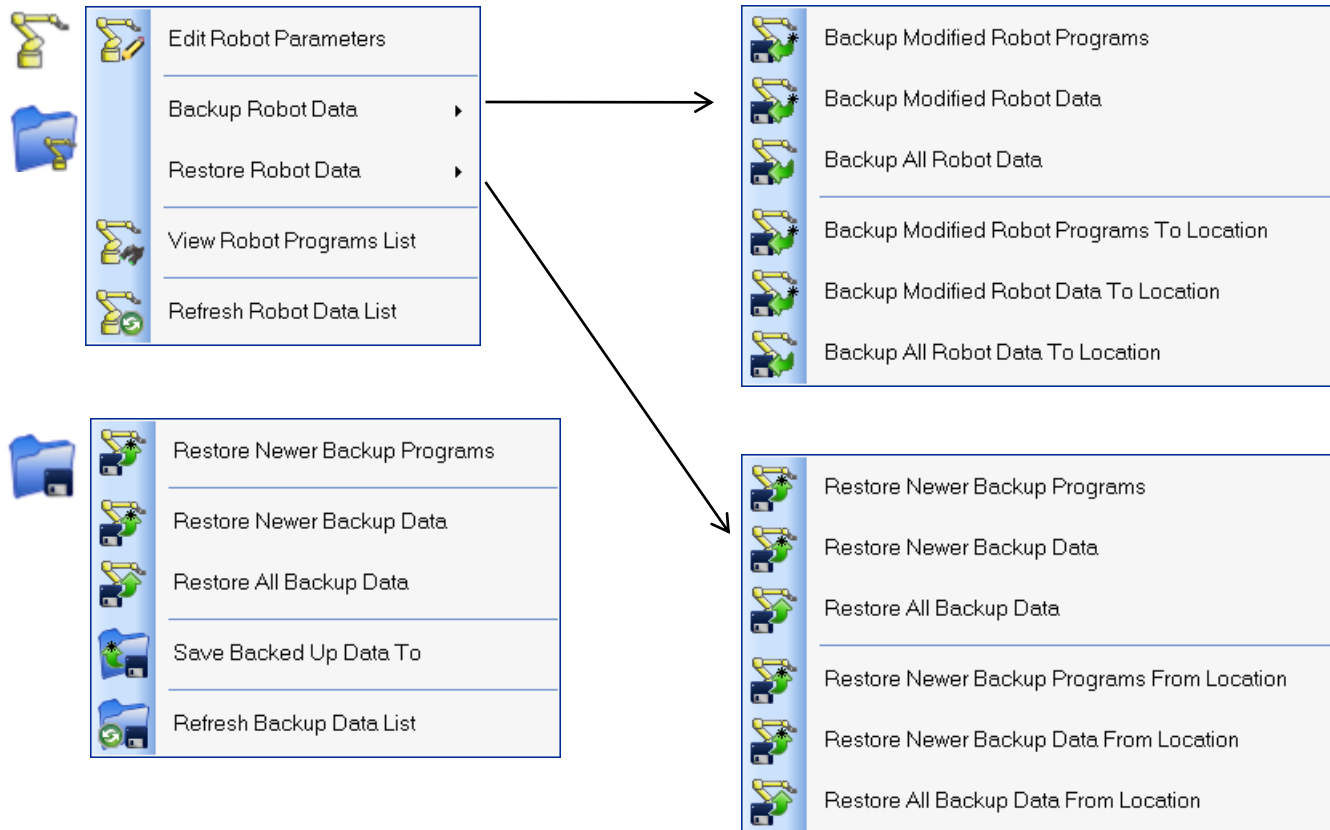
Pressing the green Refresh button will cause the PRISM Explorer Pane to clear all icons from the pane and retrieve for each robot its current programs, parameters and backup files.

Pressing the red Exit button will close the PRISM Explorer Pane.

The PRISM Explorer Panel can be shown or hidden by selecting the PRISM Explorer menu option under the View menu of the PRISM Menu Bar.

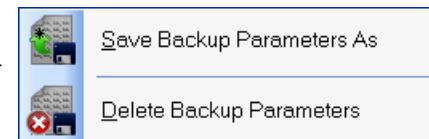
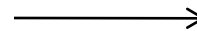
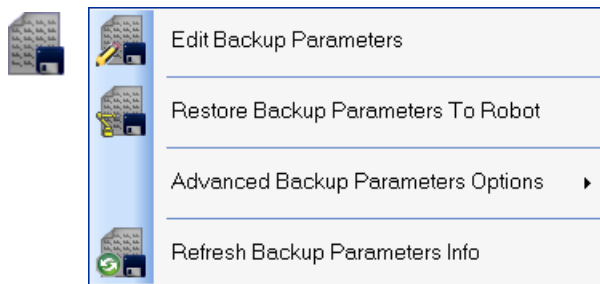
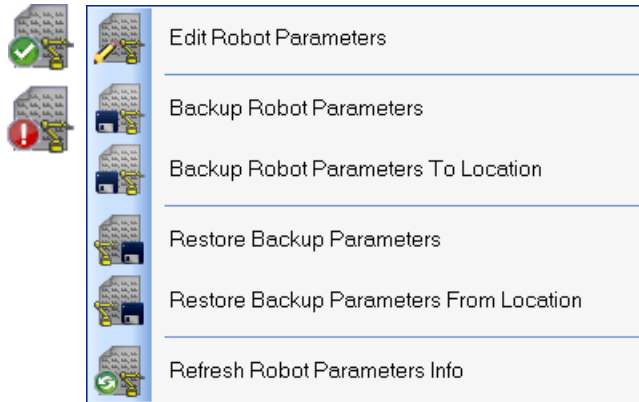


PRISM Explorer Pane

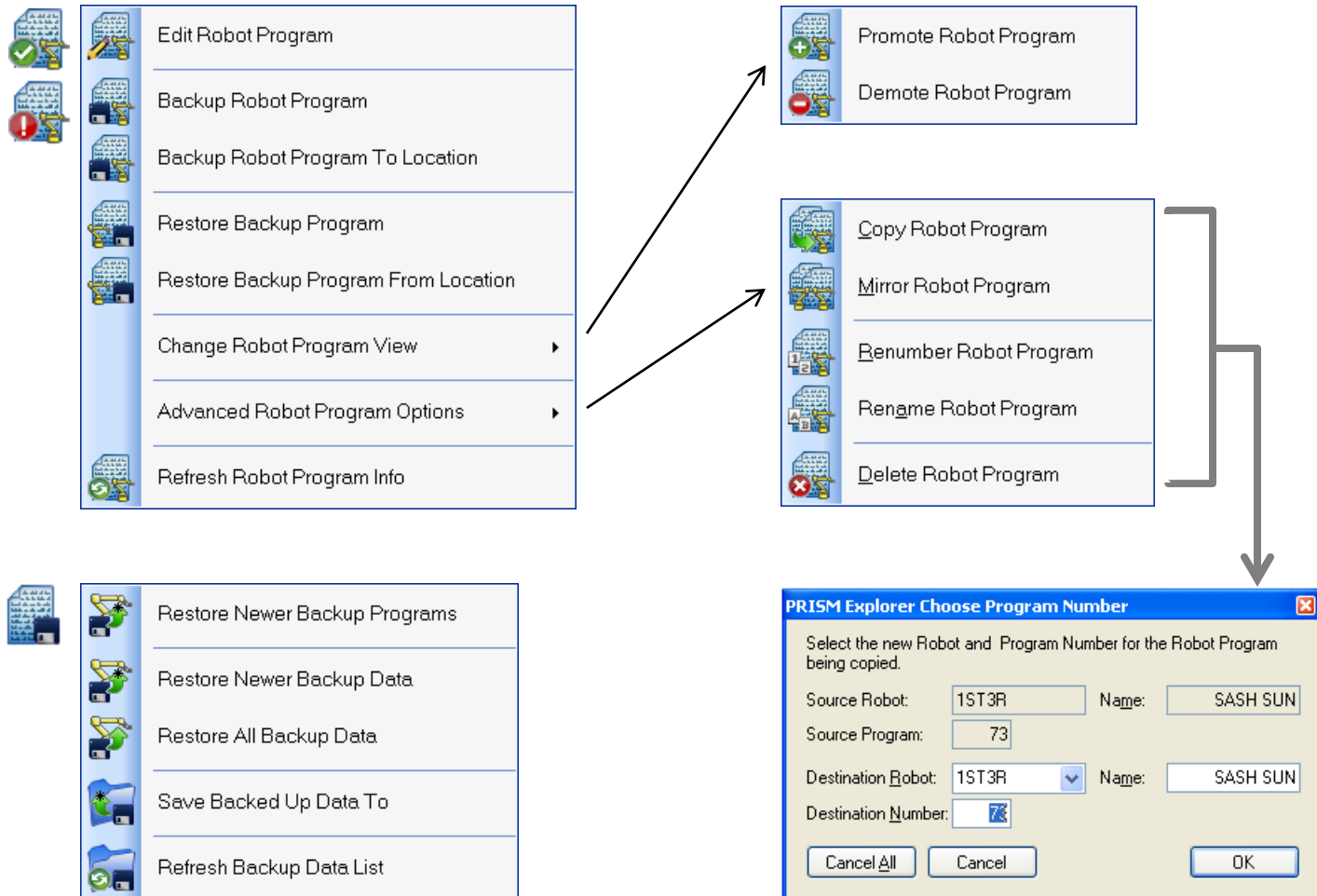


- The context menu Refresh command is a soft refresh.

PRISM Explorer Pane

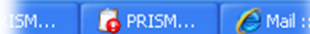
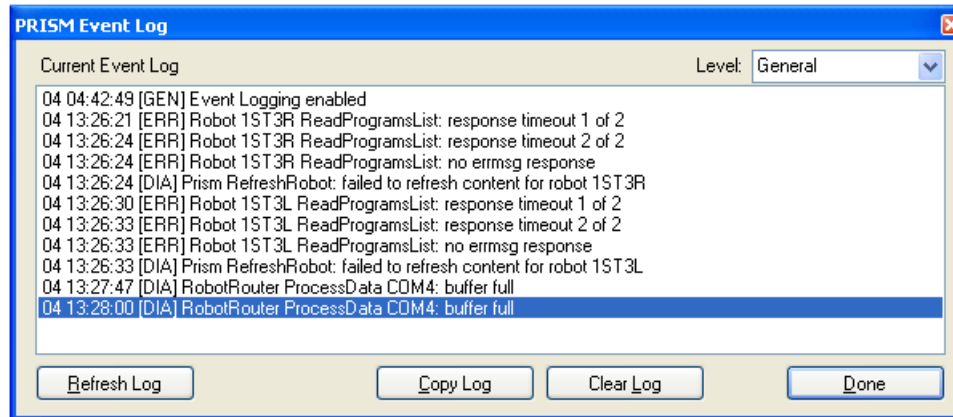
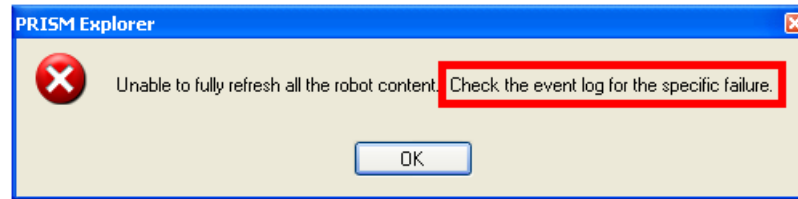


PRISM Explorer Pane



- Promotion and demotion is a visual property only.
- The Copy, Mirror, Renumber and Rename commands use the PRISM Choose Program Number dialog.

PRISM Event Log



- The Event Log is accessed under the Tools menu of the PRISM Menu Bar.
- The Event Log dialog will appear on the Windows task bar whenever the dialog is open.

PRISM Event Log

Event logs are viewable only through the PRISM Event Log dialog.

Event logs are listed by the date at which the event occurred.

Event log entries consists of a timestamp, an event level and an event description.

The timestamp shows the time and the day on which the event occurred. The month and year must be inferred from the day.

The event level groups event logs by event severity.

The event description can be cryptic and is meant to provide PRISM technical support personnel with insights into the cause of the failure.

Event level provides insight into the severity of the event and will be one of three levels.

[GEN] is a general event. General events are informational, and do not indicate a software failure.

[ERR] is an error event. Error events are failures due to a problem outside the control of the PRISM software.

[DIA] is a diagnostic event. Diagnostic events are failures due to a problem that should have been within the control of PRISM.

Event logs are not persisted. The events list is lost when the PRISM software is shutdown.

The current events list is automatically refreshed every two minutes while the dialog is open.

The current events list is automatically sorted from oldest to newest.

The current events list can be filtered by choosing the level of event to display.

Disabled – stops the display of all event logs.

General - displays all event logs, including informational logs that are not necessarily associated with a software failure.

Diagnostics - displays all event logs, except for General events.

Error - displays only error event logs.

Error events are typically indicative of problems with communications, such as a network error or a timeout waiting for a robot response.

Diagnostic event logs should be captured and submitted to Pioneer Software for analysis and resolution. Sometimes the cause of a diagnostic event can be traced back to an earlier error event. In that circumstance, resolving the error event will also resolve the diagnostic event.

Resolving Diagnostic events not linked to an Error event may require modification to the PRISM software.

PRISM Actions Log

The screenshot shows the PRISM software interface with the Actions Log window open. The Actions Log window displays a table of actions performed by Beta Tester on April 4, 2008. The interface includes a menu bar, a toolbar, and a file explorer on the left.

PRISM Actions Log

Actions Log Filters Help

1 Day 1 Week 1 Month 1 Year Custom Refresh Save Print

[All Users] Include Archives Done

Actions from the past 24 hours Apr-04-2008 20:26

Date	User Name	Source	Object	Action
Apr-04-2008 02:49:59	Beta Tester	Explorer Panel	1ST3R:PRG73	Deleted from robot
Apr-04-2008 02:50:39	Beta Tester	Explorer Panel	1ST3R:PRG75	Deleted from robot
Apr-04-2008 13:27:37	Beta Tester	Explorer Panel	1ST3R:PRG70	Backed up from robot
Apr-04-2008 13:27:51	Beta Tester	Explorer Panel	1ST3R:PRG71	Backed up from robot
Apr-04-2008 13:28:04	Beta Tester	Explorer Panel	1ST3R:PRG72	Backed up from robot
Apr-04-2008 13:28:17	Beta Tester	Explorer Panel	1ST3R:PRG74	Backed up from robot
Apr-04-2008 13:38:31	Beta Tester	Explorer Panel	1ST3R:PRG070	Restored from backup
Apr-04-2008 19:19:28	Beta Tester	Program Editor	1ST3L:PRG72	Changed SLIDER (mm) for Step 9 from -600 to -500
Apr-04-2008 19:19:28	Beta Tester	Program Editor	1ST3L:PRG72	Changed SLIDER (mm) for Step 10 from -600 to -500
Apr-04-2008 19:19:29	Beta Tester	Program Editor	1ST3L:PRG72	Changed SPEED for Step 18 from 1100 to 1200
Apr-04-2008 19:19:29	Beta Tester	Program Editor	1ST3L:PRG72	Program saved to C:\PRISM Data\Robots\1ST3L\PRG072.rbt
Apr-04-2008 19:21:08	Beta Tester	Parameters Editor	1ST3L:PARAMS	Changed Y for Parameter Gun #1 from 0 to 200
Apr-04-2008 19:21:08	Beta Tester	Parameters Editor	1ST3L:PARAMS	Changed Y for Parameter Gun #2 from 0 to 400
Apr-04-2008 19:21:08	Beta Tester	Parameters Editor	1ST3L:PARAMS	Changed Y for Parameter Gun #3 from 0 to 600
Apr-04-2008 19:21:08	Beta Tester	Parameters Editor	1ST3L:PARAMS	Gun Parameters written to robot

Refresh Completed Successfully Start Timer 08:27:05 PM

A Actions Log Menu Bar

C Actions Log Display Range

D Actions Log List

B Actions Log Toolbar

PRISM Actions Log

The Actions Log window initially displays all action log entries for the previous 24 hours.

- Toolbar buttons make it easy to choose different display ranges.

- The toolbar button clicked to set the display range remains clicked until a different display range is set.

- The Actions Log Display Range label describes the current display range.

The Actions Log list initially sorts all listed action log entries by date.

- The list can be sorted by user name, source, object and action by clicking the list column headers.

- The list can be reverse sorted by clicking the same column header a second time.

- The list can be resized by increasing or decreasing the size of the column headers.

The Actions Log list initially displays action log entries for all usernames within the current display range.

- The list can be filtered to show action logs for a single username.

Each Actions Log entry describes a single action that has modified data in some way.

- The Date identifies when the action was performed.

- The User Name identifies who performed the action.

- The Source identifies from which PRISM window the action was performed.

- The Object identifies what was the target of the action.

- The Action identifies what was done to the target of the action.

Each Actions Log entry contains enough information to allow the action to be undone.

- Actions that delete objects can only be undone if a backup exists to be restored.

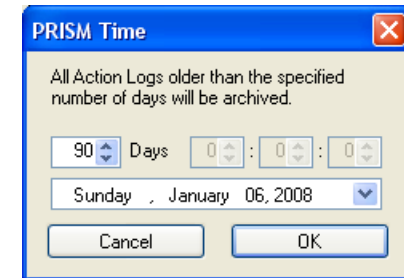
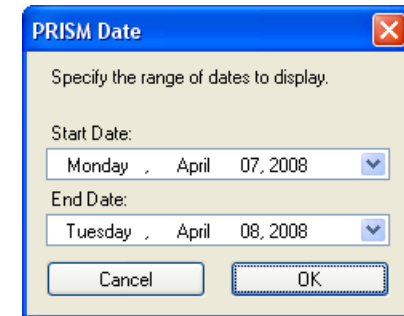
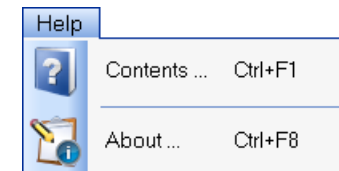
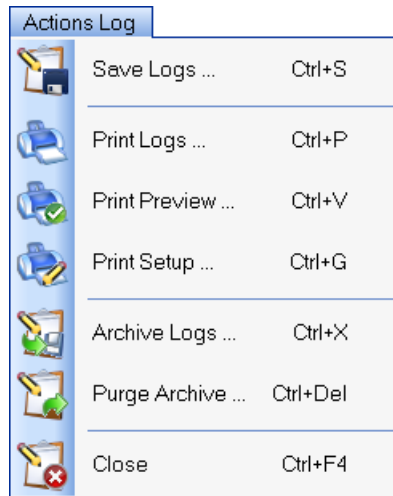
- Actions that change object data include both the new value and original value in the action description.

The Actions Log list cannot be modified.

- Older action log entries can be archived into a separate database.

- Older action log entries in the archive database can be purged.

PRISM Actions Log



- The Actions Log toolbar buttons behave the same as their equivalent menu options.

PRISM Security

The image shows a screenshot of a software dialog box titled "PRISM Program Editor". The dialog box has a blue title bar with a close button in the top right corner. Below the title bar, the text "Write Program PRG70 To Robot 1ST3R" is displayed. The dialog contains three input fields: "User Name:" with a dropdown menu showing "Bob Roberts" and "Specialist" next to it; "User Id:" with a text box containing "12345"; and "Password:" with an empty text box. There are two buttons: "OK" and "Cancel". Annotations are placed around the dialog: a red "A" points to the title bar, a red "B" points to the title text, a red "C" points to the "User Name:" and "User Id:" fields, and a red "D" points to the "Specialist" text.

A Requesting Window

B Action To Be Performed

C User Login Information

D User Account Level

- All account levels are able to perform all the same actions within the PRISM software.
- The User Id and Password are case sensitive, and must have the correct case to be recognized and accepted.
- The difference between account levels is what each is allowed to do within the PRISM User Accounts dialog.

PRISM Security

Any user, regardless of account level can display the dialog.

A valid login must be provided before the PRISM User Accounts dialog will display.

The current user and account level is displayed in the upper right corner of the dialog.

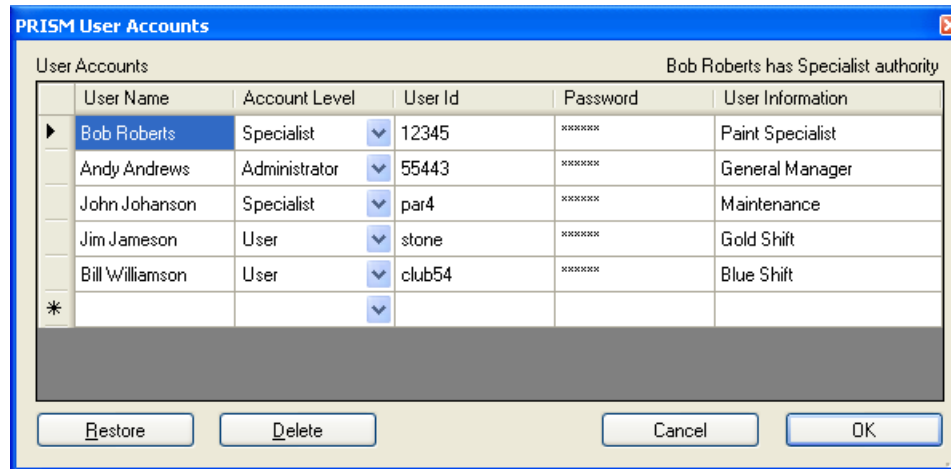
Modifications made to user accounts will be captured in the PRISM Actions Log.

While the User Accounts dialog is open it is not possible to set focus to another PRISM window.

Create a new user account by entering account information into the empty row in the User Accounts table.

If no empty row is visible then the current user lacks sufficient privilege to create new accounts.

All properties except the User Information must be specified to create a new account



Action	User	Specialist	Administrator
View Passwords	No	No	Yes
Create New Accounts	No	Yes ¹	Yes
Modify Own Account	Yes	Yes	Yes
Modify Other Accounts	No	Yes ²	Yes
Delete Own Account	Yes	Yes	Yes
Delete Other Accounts	No	Yes ²	Yes

¹ Can only create accounts with the same or lower access level.

² Can only modify or delete accounts with a lower access level.

PRISM Program Editor

PRISM: Toyota West STG1N3

Tools View Windows Help

Program Editor ... Ctrl+E

Parameters Editor... Ctrl+M

Actions Log ... Ctrl+F2

Event Log ... Ctrl+F3

Security... Ctrl+F6

Close Alt+F4

PRG72

PRG73

PRG74

PRG75

PRG80

PRG81

PRG82

PRG83

PRG84

1ST3R:PRG86

1ST3R:PRG75

PRISM Program Editor 1ST3R: * PRG75 [SASH SUN]

Editor Program Help

Read Write Load Save Save As Undo Redo Clear Frame Print

1ST3R: * PRG75 [SASH SUN] From Robot

STEP	LENGTH mm	HEIGHT mm	WIDTH mm	ALPHA DEG	BETA DEG	GANMMA DEG	SLIDER (mm)	INTP LATE	SPEED	SMOOTH LEVEL
1	-2579.90	-1990.00	-781.90	-0.95	-178.87	-1.31	-850.00	JOINT	50	1
2	-2579.70	-1877.20	-781.90	-0.94	-178.87	-1.31	-850.00	JOINT	50	1
3	-2579.80	-1684.30	-781.90	-0.95	-178.87	-1.31	-850.00	JOINT	50	1
4	-2153.50	-1253.20	-787.30	-0.95	-178.87	-1.31	-850.00	LINEAR	1100	1
5	-1879.20	-890.40	-1209.40	178.56	0.04	-145.12	-850.00	LINEAR	1100	5
6	-455.10	-704.10	-1258.60	-2.84	108.07	-4.54	-500.00	JOINT	90	5
7	166.20	-807.10	-1313.80	-3.23	107.82	17.57	-500.00	LINEAR	1100	5
8	329.00	-802.40	-1302.40	-2.82	108.07	-4.53	-600.00	LINEAR	650	5
9	302.50	-829.50	-1320.60	-2.82	108.07	-4.53	-600.00	LINEAR	600	5
10	1829.50	-732.60	-1320.60	-2.82	108.08	-4.52	-600.00	LINEAR	650	5
11	1320.60	-733.70	-1756.90	-2.82	108.07	17.16	-600.00	LINEAR	650	5
12	39.20	-733.70	-1756.90	-2.82	108.07	-4.53	-600.00	LINEAR	600	5
13	39.20	-733.70	-1756.90	-2.82	108.07	-4.53	-600.00	LINEAR	600	5
14	95.30	-539.10	-1759.90	-11.71	108.07	-4.53	-600.00	LINEAR	650	5

Maintain Angle of Length Axis to Slider Axis

Start Timer 08:12:57 PM

A Program Editor Menu Bar

B Program Editor Toolbar

C Program Editor Program Source

D Program Editor Grid

E Program Editor Status Bar

PRISM Program Editor

The Program Editor can edit any robot program.

- Programs can be read into the editor from a robot.

- Programs can be loaded into the editor from a file.

The Program Editor regulates what can be changed for robot programs read from robot.

- Programs read from robot while in playback cannot be modified.

- Programs read from a robot in auto mode cannot modify robot motion properties.

The Program Editor can save robot programs to disk in different formats.

- The Program file can be saved as a standard binary robot program file.

- The Program file can be saved as a comma separated file, suitable for loading into a spreadsheet.

- The Program file can be saved as a text file, suitable for display in a text editor.

The Program Editor can change programs without having to shutdown the editor.

- The Read toolbar button, or Read Program menu option, can read any program from any robot.

- The Load toolbar button, or Load Program menu option, can load any program file from disk.

- The Clear toolbar button, or Clear Program menu option, will clear the current program from the editor.

The Program Editor can edit programs offline.

- The Program Editor must be used to save the Program file to disk.

- The Program file can be loaded into the Program Editor on any computer with PRISM installed.

- The Program file contains all information necessary to edit the program on any PRISM computer.

The Program Editor records all modifications made to the robot program.

- All modifications are identified in the program grid as cells with inverted colors.

- All modifications can be undone, even after the program has been written or saved.

- All modifications are recorded in the PRISM Actions Log each time the program is written to robot or saved to disk.

- Undone changes can be redone.

The Program Editor displays the name and source of the robot program being edited.

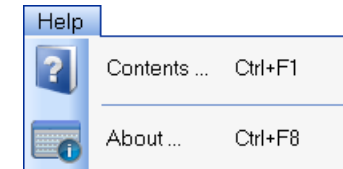
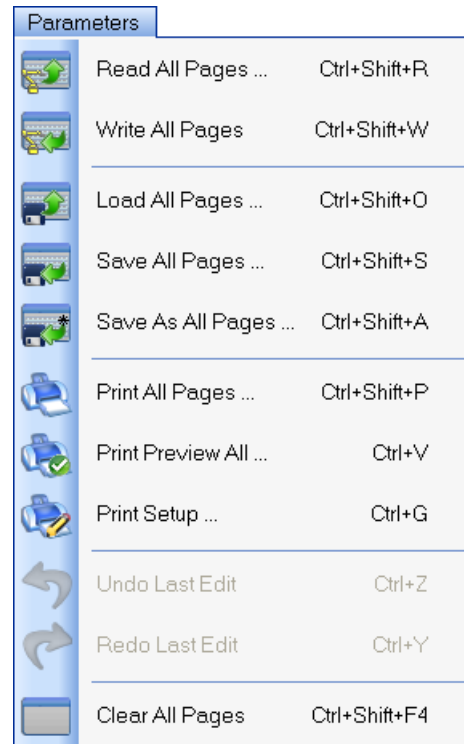
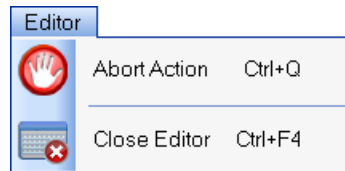
- The Program name include the program number, with the name in brackets.

- The Program source indicates if the program was read from robot, loaded from disk, or is a new program.

- The Program name will show an asterisk if the program has been modified without being written or saved.

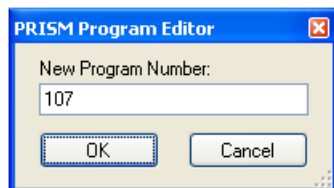
- The Program source will change to **Editor** if the robot program has been modified but not yet written to robot or saved to disk.

PRISM Program Editor

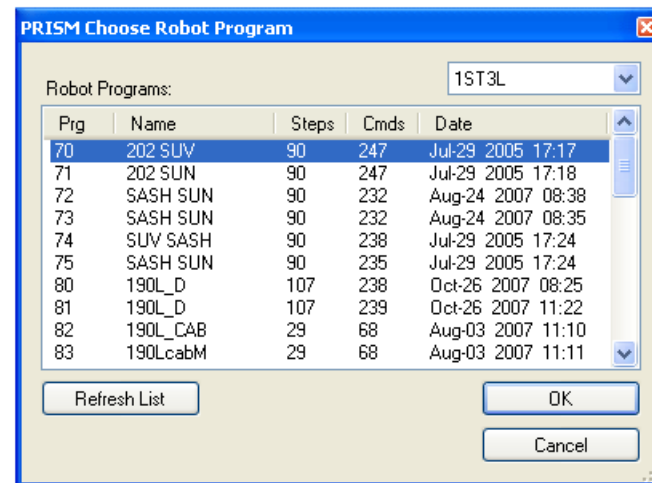


- The Program Editor toolbar buttons behave the same as their equivalent menu options.
- The Undo and Redo toolbar buttons will display a tooltip describing what would be undone or redone if clicked.
- To insert a step at the end of a program, specify a step number one greater than the last step number.

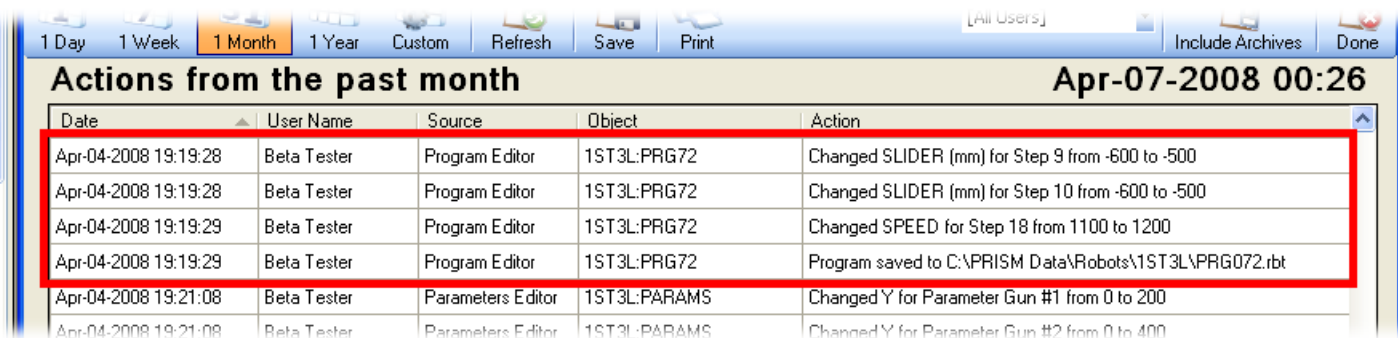
PRISM Program Editor



New programs must be assigned a robot and program number.



List of programs that can be read from robot.



1 Day 1 Week 1 Month 1 Year Custom Refresh Save Print [All Users] Include Archives Done

Actions from the past month Apr-07-2008 00:26

Date	User Name	Source	Object	Action
Apr-04-2008 19:19:28	Beta Tester	Program Editor	1ST3L:PRG72	Changed SLIDER (mm) for Step 9 from -600 to -500
Apr-04-2008 19:19:28	Beta Tester	Program Editor	1ST3L:PRG72	Changed SLIDER (mm) for Step 10 from -600 to -500
Apr-04-2008 19:19:29	Beta Tester	Program Editor	1ST3L:PRG72	Changed SPEED for Step 18 from 1100 to 1200
Apr-04-2008 19:19:29	Beta Tester	Program Editor	1ST3L:PRG72	Program saved to C:\PRISM Data\Robots\1ST3L\PRG072.rbt
Apr-04-2008 19:21:08	Beta Tester	Parameters Editor	1ST3L:PARAMS	Changed Y for Parameter Gun #1 from 0 to 200
Apr-04-2008 19:21:08	Beta Tester	Parameters Editor	1ST3L:PARAMS	Changed Y for Parameter Gun #2 from 0 to 400

Program modifications are recorded in the PRISM Action Log.

PRISM Parameters Editor

PRISM: Toyota West STG1N3

Tools View Windows Help

- Program Editor ... Ctrl+E
- Parameters Editor... Ctrl+M**
- Actions Log ... Ctrl+F2
- Event Log ... Ctrl+F3
- Security... Ctrl+F6
- Close Alt+F4

1ST3L:PARAMS

PRISM Parameters Editor 1ST3L:PARAMS

Editor Parameters Help

Read Write Load Save Save As Undo Redo Clear Print Preview

Gun Settings **Home Positions** Range Limits General Parameters

1ST3L From Robot

Pos	S1 [pulses]	S2 [pulses]	S3 [pulses]	S4 [pulses]	S5 [pulses]	S6 [pulses]	S7 [pulses]
Home A1	-61059	92203	-10831	-81175	-36441	848	76554
Home A2	-69289	75754	-1535	-76714	-34882	68595	76552
Home A3	-72182	79511	9393	-75802	-51829	3363	76557
		3711	-22584	-94159	-66521	64192	76551

Pulses Parameters 1500 thru 1563

	3710	-22582	94155	66521	-64188	-76552	03:13:12 AM
--	------	--------	-------	-------	--------	--------	-------------

Pos	X [mm]	Y [mm]	Z [mm]	XL [mm]	YL [mm]	ZL [mm]
Home B1	-1714.6	771.3	-1964.3	-850.0	0.0	0.0

Upper / Lower Limit +/- Millimeters Parameters 1580 thru 1595

Live Pos	-85.56	-31.57	-47.35	-239.23	267.48	-35.14	03:13:14 AM
----------	--------	--------	--------	---------	--------	--------	-------------

Start Timer 03:14:29 AM

A Parameters Editor Menu Bar

C Parameters Editor Parameter Tabs

E Parameters Editor Status Bar

B Parameters Editor Toolbar

D Parameters Editor Parameters Source

PRISM Parameters Editor

The Parameters Editor provides tab pages for viewing and modifying specific types of parameters.

The Gun Settings page displays gun coordinates for each gun defined.

The Home Positions page displays home position coordinate for each home position defined.

The Range Limits page displays upper and lower range limits for robot motion.

The General page display groups of parameter values, including parameter descriptions and units.

The Parameters Editor can edit robot parameters from any source.

Parameters can be read into the editor from a robot.

Parameters can be loaded into the editor from a file.

Parameters for a single page or for all pages can be read or loaded into the editor.

The Parameters Editor can save robot parameters to disk in different formats.

The Parameters from a single page or from all pages can be saved.

The Parameters file can be saved as the standard binary parameters file.

The Parameters file can be saved as a comma separated file, suitable for loading into a spreadsheet.

The Parameters file can be saved as a text file, suitable for display in a text editor.

The Parameters Editor can change the source of the parameters without having to shutdown the editor.

The Read toolbar button, or Read Parameters menu option, can read parameters from any robot.

The Load toolbar button, or Load Parameters menu option, can load a parameters file from disk.

The Clear toolbar button, or Clear Parameters menu option, will clear the parameters from the editor.

The Parameters Editor can edit parameters offline.

The Parameters Editor must be used to save the Parameters file to disk.

The Parameters file can be loaded into the Parameters Editor on any computer with PRISM installed.

The Parameters file contains all information necessary to edit the parameters on any PRISM computer.

The Parameters Editor records all modifications made to the robot parameters.

All modifications are identified in the parameters grids as cells with inverted colors.

All modifications can be undone, even after the parameters have been written or saved.

All modifications are record in the PRISM Actions Log each time the parameters are written or saved.

Undone changes can be redone.

The Parameters Editor displays the name and source of the robot parameters being edited.

The Parameters on each page can be from a different source, but must be from the same robot.

The Parameters source indicates if the parameters were read from robot, loaded from disk, or are new.

The Parameters robot name will show an asterisk if any have been modified without being written or saved.

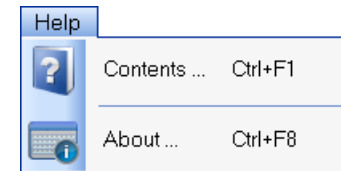
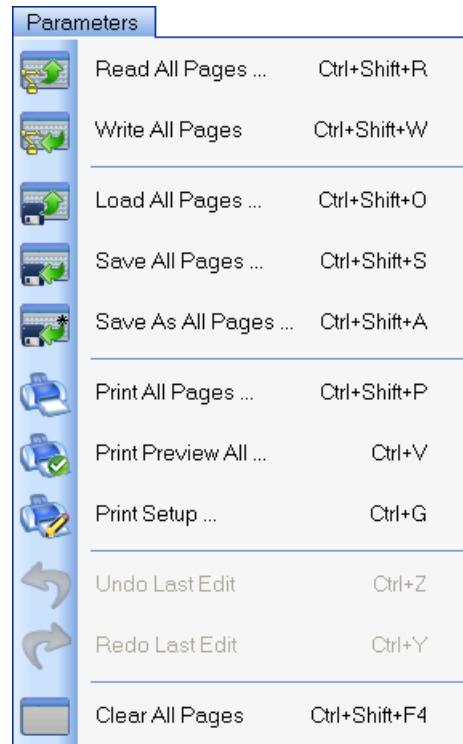
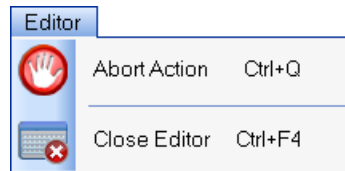
The Parameters grid on each page identifies the range of parameters being displayed.

The Parameters Editor General page displays the description and units for the displayed parameters.

The Parameters description and units can be modified.

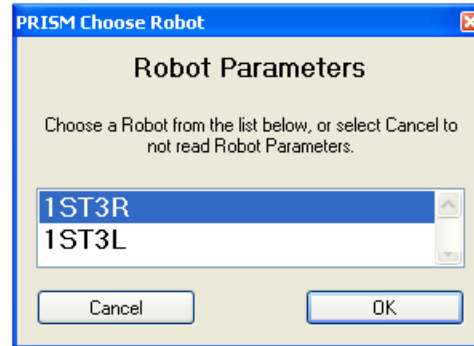
Changes to the description and units are recorded in the PRISM Action Log.

PRISM Parameters Editor

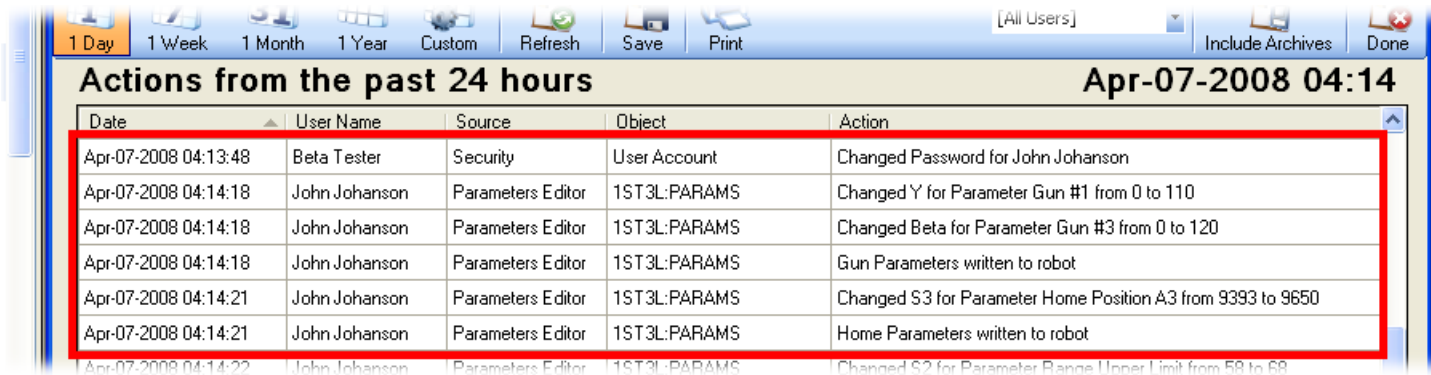


- The Parameters Editor toolbar buttons behave nearly the same as their equivalent menu options.
- The single difference between the toolbar and the menus is the toolbar affects only the active Parameters page.
- Loading parameters from file always clears all Parameter pages of their current content prior to loading.
- The Undo and Redo toolbar buttons will display a tooltip describing what would be undone or redone if clicked.

PRISM Parameters Editor



Parameters must always be assigned a robot.

A screenshot of the PRISM Action Log interface. The top bar shows filters for "1 Day", "1 Week", "1 Month", "1 Year", "Custom", "Refresh", "Save", and "Print". On the right, it says "[All Users]" and "Include Archives Done". The main heading is "Actions from the past 24 hours" with a timestamp "Apr-07-2008 04:14". Below this is a table with the following data:

Date	User Name	Source	Object	Action
Apr-07-2008 04:13:48	Beta Tester	Security	User Account	Changed Password for John Johanson
Apr-07-2008 04:14:18	John Johanson	Parameters Editor	1ST3L:PARAMS	Changed Y for Parameter Gun #1 from 0 to 110
Apr-07-2008 04:14:18	John Johanson	Parameters Editor	1ST3L:PARAMS	Changed Beta for Parameter Gun #3 from 0 to 120
Apr-07-2008 04:14:18	John Johanson	Parameters Editor	1ST3L:PARAMS	Gun Parameters written to robot
Apr-07-2008 04:14:21	John Johanson	Parameters Editor	1ST3L:PARAMS	Changed S3 for Parameter Home Position A3 from 9393 to 9650
Apr-07-2008 04:14:21	John Johanson	Parameters Editor	1ST3L:PARAMS	Home Parameters written to robot
Apr-07-2008 04:14:22	John Johanson	Parameters Editor	1ST3L:PARAMS	Changed S2 for Parameter Range Upper Limit from 58 to 68

Parameter modifications are recorded in the PRISM Action Log.

PRISM Parameters Editor

Gun Setting Page

PRISM Parameters Editor 1ST3L:PARAMS

Editor Parameters Help

Read Write Load Save Save As Undo Redo Clear Print Preview Abort Close

Gun Settings Home Positions Range Limits General Parameters

1ST3L **From Robot**

Gun	X [mm]	Y [mm]	Z [mm]	Alpha [deg]	Beta [deg]	Gamma [deg]
1	-355.0000	0.0000	625.0000	0.0000	-60.0000	0.0000
2	409.0000	0.0000	85.2300	180.0000	-90.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Parameters 1106 thru 1123

PRISM Parameters Editor

Home Positions Page

PRISM Parameters Editor 1ST3L:PARAMS

Editor Parameters Help

Read Write Load Save Save As Undo Redo Clear Print Preview Abort Close

Gun Settings **Home Positions** Range Limits General Parameters

1ST3L From Robot

Pos	S1 [pulses]	S2 [pulses]	S3 [pulses]	S4 [pulses]	S5 [pulses]	S6 [pulses]	S7 [pulses]
Home A1	-61059	92203	-10831	-81175	-36441	848	76554
Home A2	-69289	75754	-1535	-76714	-34882	68595	76552
Home A3	-72182	79511	9393	-75802	-51829	3363	76557
Home A4	-53758	3711	-22584	-94159	-66521	64192	76551

Upper / Lower Limit +/- * Pulses Parameters 1500 thru 1563

Live Pos	53757	3710	-22582	94155	66521	-64188	-76552
----------	-------	------	--------	-------	-------	--------	--------

01:11:24 PM

Pos	X [mm]	Y [mm]	Z [mm]	XL [mm]	YL [mm]	ZL [mm]
Home B1	-1714.6	771.3	-1964.3	-850.0	0.0	0.0

Upper / Lower Limit +/- Millimeters Parameters 1580 thru 1595

Live Pos	-85.56	-31.57	-47.35	-239.23	267.48	-35.14
----------	--------	--------	--------	---------	--------	--------

01:11:26 PM

- The Home Positions grids display only the average of the upper and lower range positions.
- The offset to the upper and lower position values is displayed in the Pulse boxes below each grid.

PRISM Parameters Editor

Home Positions Page

Selecting a cell in either of the Home Positions grids displays the upper and lower offset for that position value.

The actual upper position value is the selected position value plus the displayed offset value.

The actual lower position value is the selected position value minus the displayed offset value.

Selecting multiple cells will display the common upper and lower offset for all selected position values.

If the offsets are different then the smallest offset is displayed in the Pulses box.

If the offsets are different an asterisk is appended to the Pulses box and the offset is displayed in red.

Changing the offset value and clicking the Set button will update the offset value for all selected cells.

All cells whose offset value is now different will become inverted to indicate the change.

The value displayed in the selected cell will not change because only the offset changed, not the averaged value.

Below each Home Position grid is a Live Position grid.

Click the Refresh button to have the Live Position grid display the current robot position.

Click the Use button to apply the current robot position as the new location of the selected home position.

The timestamp below the Live Position grid identifies when the robot position was last read from robot.

Home A4	-53758	3711	-22584	-94159	-66521	64192	76551
Upper / Lower Limit +/-							
Live Pos	53757	3710	-22582	94155	66521	-64188	-76552

100* Pulses Set Parameters 1500 thru 1563
Range tolerance not equal for selected positions. Low range = 100, High range = 200.

Refresh Use 01:11:24 PM

If the offsets are different, hovering the mouse over the Pulses box will display the range of offsets.

PRISM Parameters Editor

Range Limits Page

PRISM Parameters Editor 1ST3L:PARAMS

Editor Parameters Help

Read Write Load Save Save As Undo Redo Clear Print Preview Abort Close

Gun Settings Home Positions **Range Limits** General Parameters

1ST3L **From Robot**

Limits	S1 [deg]	S2 [deg]	S3 [deg]	S4 [deg]	S5 [deg]	S6 [deg]
Upper	75.0000	58.0000	88.0000	720.0000	720.0000	210.0000
Lower	-75.0000	-88.0000	-83.0000	-720.0000	-720.0000	-210.0000

Parameters 1 thru 12

Limits	X [mm]	Y [mm]	Z [mm]			
Upper	5000.0000	5000.0000	5000.0000			
Lower	-5000.0000	-5000.0000	-5000.0000			

Parameters 434 thru 439

PRISM Parameters Editor

General Page

The screenshot shows the PRISM Parameters Editor software interface. The title bar reads "PRISM Parameters Editor 1ST3L:PARAMS". The menu bar includes "Editor", "Parameters", and "Help". The toolbar contains icons for Read, Write, Load, Save, Save As, Undo, Redo, Clear, Print, Preview, Abort, and Close. The main window has tabs for "Gun Settings", "Home Positions", "Range Limits", and "General Parameters". The "General Parameters" tab is active, showing a table of parameters for "1ST3L*" loaded "From File". The table has columns for Param, Name, Value, and Unit. The "Start" is 1 and "Count" is 12. There are "Refresh", "Prev", and "Next" buttons. The table data is as follows:

Param	Name	Value	Unit
1	Theta1-angle Upper Limit	75.0000	deg
2	Theta2-angle Upper Limit	58.0000	deg
3	Theta3-angle Upper Limit	89.0000	deg
4	Theta4-angle Upper Limit	720.0000	deg
5	Theta5-angle Upper Limit	720.0000	deg
6	Theta6-angle Upper Limit	210.0000	deg
7	Theta1-angle Lower Limit	-75.0000	deg
8	Theta2-angle Lower Limit	-88.0000	deg
9	Theta3-angle Bottom Value	-83.0000	deg
10	Theta4-angle Lower Limit	-720.0000	deg
11	Theta5-angle Lower Limit	-720.0000	deg
12	Theta6-angle Lower Limit	-210.0000	deg

- The General grid will display a description and units for each parameter when available.
- Modifications to the description and units can be saved and will be captured in the PRISM Actions Log.

PRISM Robot Communications

General Behavior

Anytime the PRISM software is communicating with a robot, the communication will be reflected in a status bar.

The status bar uses a progress bar to track the progress of the communication.

- Some commands are open ended and use a marquee to indicate the communication is ongoing.

- Some commands are fixed and use a standard progress meter to indicate command duration.

The status bar displays a description of what is being communicated.

- Some commands are simple and consists of a single description.

- Some commands are complex and will display a descriptions for each stage of the command.

The PRISM software has multiple status bars for tracking communication progress.

- Each PRISM Program Editor window has its own status bar.

- Each PRISM Parameters Editor window has its own status bar.

- All other windows uses the PRISM Status Bar.

The PRISM software automatically traps and recovers from any failed robot communications.

- A simple message will be displayed noting the failure.

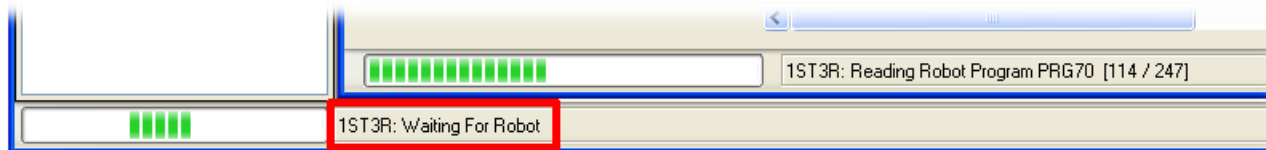
- The cause of the failure will always be logged to the PRISM Event Log.

The PRISM software allows one window at a time to communicate with a robot.

- If two windows try to communicate with the same robot at the same time, the second window block.

- The second window will note the blockage in its status bar.

- When the first window completes, the second window automatically resumes.



PRISM Robot Communications

Aborting Communications

Anytime the PRISM software is communicating with a robot, the communication can be aborted.

Click an Abort toolbar button to abort communication.

The Abort All toolbar button on the PRISM Activity Bar aborts all robot communications.

All other Abort toolbar buttons abort robot communication specific to that window.

Communication aborts once the current command completes.

Some commands are short, allowing communications to abort immediately.

Some commands are long, creating a delay before the abort completes.

The command description in the PRISM Status Bar will reflect that the current command is aborting.

