Release Notes

(9527-x) ISaGRAF Workbench v6, for programming ISaGRAF Runtimes v3, v4, and v5. Includes: Plugin and Installer toolkits.
Version 6.06.08 (released 5/2020)

Catalog Number ISaGRAF6

AB QUALITY *Allen-Bradley*

These release notes describe version information for ISaGRAF6, version 6.06.08 (released 5/2020).

Requirements
This release has the following requirements.

For optimal performance of the ISaGRAF workbench, your personal computer should meet or exceed the following hardware and software requirements. The ISaGRAF workbench can be installed on a personal computer that meets the operating system minimum requirements, but may not meet performance expectations when used in a production system.

Hardware requirements

- 2 GB of RAM
- 4 GB of available space on the hard drive
- 2.2 GHz processor or greater
- 5400 RPM hard disk drive
- DirectX 9 capable video card running at 1024 x 768 resolution

Software requirements

- Windows® operating system:
  - Windows 7 Service Pack 1 Professional or Enterprise (32-bit and 64-bit)
  - Windows 8 Professional or Enterprise (32-bit and 64-bit)
  - Windows 8.1 Professional or Enterprise (32-bit and 64-bit)
  - Windows 10 Professional or Enterprise (32-bit and 64-bit)
- (optional) Microsoft® Office Word Viewer and Microsoft Office Compatibility Pack

Anti-virus software

Rockwell Software products are expected to be compatible with most anti-virus protections on the market. However, proper configuration is required. It is important to understand that any of these anti-virus protections can impact operation if the configuration is too restrictive. These configurations are generally in the area of firewalls, network threat protections, and access controls.

Features
This release includes the following system features.

The following new features and functionality have been added to this release of the ISaGRAF application.

New features

There are no new features in this release.

Enhanced features

- The ISaGRAF Gateway OPC® Data Access Server version 6.6 with load on demand enables monitoring applications running on controllers with either big-endian or little-endian format for communication with an ISaGRAF version 5 target.
- Import or export variables in Excel Workbook .xlsx format. This format supports up to 1,048,576 by 16,384 rows and columns.

Corrected Anomalies
This release corrects the following anomalies.

The following list identifies the anomalies corrected in ISaGRAF version 6.6.8.

All CAMs

- In the FBD or LD editor, variables with names that include an underscore immediately followed by a digit such as _1, _2, _1_1_1 do not display the power flow coloring, data type, and online value for the variable. *[TFS 35187]*
  In this release, in the FBD or LD editor, variables with names that include an underscore immediately followed by a digit such as _1, _2, _1_1_1

display the power flow coloring, data type, and online value for the variable.

- ISaGRAF does not support adding a second device from the ISaFREE template in the Deployment view. Anomaly first identified in ISaGRAF version 6.4. *[TFS 52386]*
  In this release, ISaGRAF supports adding a second device from the ISaFREE template in the Deployment view.

- When debugging an FBD POU, the input value of a function displays an incorrect value. *[TFS 58980]*
  In this release, when debugging an FBD POU, the input value of a function does not appear.

- When downloading a device using a serial port when no serial port is found on the computer, an error message appears. *[TFS 51673]*
  In this release, when downloading a device using a serial port when no serial port is found on the computer, the **Output** window displays an error.

- Deleting a group of variables that are sorted by name from the dictionary and then undoing the deletion may select the current row as well as undeleted rows. *[TFS 40993]*
  In this release, deleting a group of variables that are sorted by name from the dictionary and then undoing the deletion selects only the current row.

- The Online Change toolbar icon and shortcut menu do not appear in the Japanese version of the Automation Collaborative Platform. *[TFS 41347]*
  In this release, the Online Change toolbar icon and shortcut menu appear in the Japanese version of the Automation Collaborative Platform.

- Importing a .tdb file that has an added, modified, or deleted Network Resource Binding parameter displays the error message "Unhandled exception occurred during the filling of the table Instance of ResNetPara". The project does not update. Closing the error message closes the project and the project cannot re-open. *[TFS 51033]*
  In this release, importing the .tdb file that has an added, modified, or deleted Network Resource Binding parameter updates the project.

- The I/O Device view of a resource does not open after creating an I/O device instance that has 2000 channels and then closing and re-opening the project. The **Output** window displays the message "Exception of type 'System.OutOfMemoryException' was thrown" and an error message appears. *[TFS 37000]*
  In this release, the I/O Device view of a resource opens after creating an I/O device instance that has 2000 channels and then closing and re-opening the project.

- Importing an ISaGRAF version 5.22 project and library replaces manual instances of function blocks with automatic instances. *[TFS 52260]*
  In this release, importing an ISaGRAF version 5.22 project and library retains manual instances of function blocks.

- Deleting a derived type variable that is monitored in the **Spy List** and then debugging the application displays an error message. *[TFS 62556]*
  In this release, deleting a derived type variable that is monitored in the **Spy List** and then debugging the application displays an Invalid icon for the deleted variable n the **Spy List**.

- In **Document Overview**, zooming in on a link between two variables does not display the selected area and displays an error message. *[TFS 48833]*
  In this release, zooming in on a link between two variables displays the selected area.

- Attempting to display the properties of a resource in Device view displays an error message. *[TFS 42818]*
  In this release, the properties of a resource appear in Device view.

- If the **Project location** or POU name includes Chinese characters, building a solution that has a POU fails and the **Output** window displays an error. *[TFS 61819]*
  In this release, if the **Project location** or POU name includes Chinese characters, the Chinese characters do not cause an error when building.

- Importing an exchange file displays an error message if the imported resource name and the program name are the same. *[TFS 51117]*
  In this release, the error message "Unable to import the file; the file may be corrupted or in an invalid format" appears if the imported resource name and the program name are the same.

- When using automatic instances of function blocks, the values of function block outputs do not appear in debug mode. *[TFS 41162]*
  In this release, when using automatic instances of function blocks, the values of function block outputs appear in debug mode.

- Copying and pasting a POU body that contains library function blocks from one FBD program to another does not paste the correct data types for instances of function blocks. *[TFS 58991]*
  In this release, copying and pasting a POU body that contains library function blocks from one FBD program to another pastes the correct data types for instances of function blocks.

- The Spanish version of the ISaGRAF opens the English version of the Automation Collaborative Platform when selecting **Start> All Programs > ISaGRAF x.x > Automation Collaborative Platform x.x.** *[TFS 27157]*
  In this release, the Spanish version of ISaGRAF opens the Spanish version of the Automation Collaborative Platform when selecting **Start > All Programs > ISaGRAF x.x > Automation Collaborative Platform x.x.**

- After editing an ST POU body, the **Cross Reference Browser** incorrectly displays an icon indicating that the cross reference data is up-to-date. *[TFS 26173]*
  In this release, after editing an ST POU body, the **Cross Reference Browser** displays a warning icon indicating that the cross reference data is out of date.

- Building a project that has an FBD POU body that contains an unconnected vertical bar, left power rail, or right power rail displays an error message. *[TFS 27484]*
  In this release, building a project that has an FBD POU body that contains an unconnected vertical bar, left power rail, or right power rail displays the applicable message in the **Output** window. Double-clicking the message in the **Output** window displays the language editor with the unconnected component selected.

- Deleting branches from a rung in the LD POU editor takes excessive time. *[TFS 40867]*
  In this release, deleting branches from a rung in the LD POU editor takes a similar duration as in ISaGRAF version 6.2.

- Scrolling the language editor while debugging an ST program causes the yellow arrow that indicates a breakpoint to disappear. *[TFS 57317]*
  In this release, scrolling the language editor while debugging an ST program does not cause the yellow arrow that indicates a breakpoint to disappear.

- Undoing changes made to the FBD POU in the language editor does not revert the last change and misplaces elements and connections lines. *[TFS 50464]*

In this release, undoing changes made to the FBD POU in the language editor reverts the last change and the placement of elements and connection lines.

- Naming a project with unsupported characters opens the **Enter Password** dialog box. *[TFS 52321]*
  In this release, naming a project with unsupported characters opens an error message.

- Copying and pasting 15 or more rungs in a ladder diagram takes excessive time. Anomaly first identified in ISaGRAF version 6.5. *[TFS 48250]*
  In this release, copying and pasting 15 or more rungs in a ladder diagram takes a similar duration as in ISaGRAF version 6.4.1.

- Renaming bit access or array member variables in the dictionary does not display a yellow warning symbol for elements with errors in the LD language editor. *[TFS 55974]*
  In this release, renaming bit access or array member variables in the dictionary displays a yellow warning symbol for elements with errors in the LD language editor.

- Changing the data type of an instance of a function block in the dictionary does not update the name of the function block in the LD language editor. *[TFS 55990]*
  In this release, changing the data type of an instance of a function block in the dictionary updates the name of the function block in the LD language editor.

- The ISaGRAF compiler may generate errors when a function block that does not have inputs serves as the input for multiple function blocks in an incorrect FBD POU execution order. Anomaly first identified in ISaGRAF version 6.4. *[TFS 30643]*
  In this release, to help prevent errors, the ISaGRAF compiler processes the function block serving as the input for the multiple function blocks before processing other function blocks.

- Opening an LD POU takes excessive time. *[TFS 48276, TFS 48088]*
  In this release, opening an LD POU takes a similar duration as in ISaGRAF version 6.4.

- A project builds even when the array or structure size exceeds the 2 GB limit. *[TFS 48330]*
  In this release, when the array or structure size exceeds the 2 GB limit, the project build fails and a compilation error appears.

- Using an exchange file to import a POU takes excessive time when a POU body is open. *[TFS 49981]*
  In this release, the time it takes to use an exchange file to import a POU when the POU body is open is reduced.

- The CAM 3 compiler generates power flow debugging information for a POU even if the **Generate Debug Info** property is set to **False**. *[TFS 40756]*
  In this release, the CAM 3 compiler does not generate power flow debugging information if the **Generate Debug Info** property is set to **False**.

- In some localized versions of the Automation Collaborative Platform, the **Error List** incorrectly displays warnings as errors. *[TFS 44515]*
  In this release, the **Error List** in localized versions of the Automation Collaborative Platform displays generated warnings as warnings.

- Adding a variable to the **Spy List** displays variable values as **OFFLINE**. Displaying values for added variables in the **Spy List** required closing and reopening the **Spy List**. *[TFS 46489]*
  In this release, adding a variable to the **Spy List** displays the values without having to close and reopen the **Spy List**.

- Importing an ISaGRAF version 5 project fails to download code to the target. **Ladder Diagram Optimized Code** in **Target Features** displays an incorrect value. *[TFS 60208]*
  In this release, importing an ISaGRAF version 5 project downloads code to the target. **Ladder Diagram Optimized Code** in **Target Features** displays the correct value based on the **FeatureOptCode** value in the .mdb file for the imported project:

    - True: FeatureOptCode = Yes
    - False: FeatureOptCode = No
    - False: FeatureOptCode has no value

- After adding an I/O device, opening an I/O parameter changes the default float parameter value from 0 to 0.0 in the **I/O Parameter** dialog box. Reopening the I/O parameter and clicking **OK** in the **I/O Parameter** dialog box displays the error message "The value is either too large of too small for [parameter]". *[TFS 57584]*
  In this release, opening an I/O parameter does not change the default float parameter value from 0 to 0.0 in the **I/O Parameter** dialog box. The **I/O Parameter** dialog box accepts any 0 float values such as 0 and 0.0.

- Deleting an array used in a structure prevents creating elements in the structure. *[TFS 42629]*
  In this release, deleting an array used in a structure does not prevent creating elements in the structure.

- Changing the **Logical Value** for a variable in the dictionary displays the value **WAIT**. *[TFS 43629]*
  In this release, changing the **Logical Value** for a variable in the dictionary displays the entered value.

- Adding a variable to the **Spy List** displays variable values as **OFFLINE**. Displaying values for added variables in the **Spy List** requires closing and reopening the **Spy List**. *[TFS 46489, TFS 43838]*
  In this release, adding a variable to the **Spy List** displays the values without having to close and reopen the **Spy List**.

- Debugging or simulating a project consumes excessive memory when an ST POU references variables. Anomaly first identified in ISaGRAF version 6.5. *[TFS 52572]*
  In this release, memory consumption is stable while debugging or simulating a project that contains an open ST POU that references variables.

- The FBD compiler does not create a MEMO variable for each instance of a P/N contact. This behavior is inconsistent with the LD compiler behavior and may lead to unexpected build results. *[TFS 43995]*
  In this release, the FBD and LD compilers create a MEMO variable for each instance of a P/N contact by default.

  The **DisableNewLDMemoContacts** parameter value in the Diamond.ini file determines the behavior of P/N contacts:

    - 0 = create a MEMO variable for each instance of a P/N contact
    - 1 = create only one MEMO variable for all the instances of a P/N contact

- Copying a rung that has a ladder and a user-defined function block and then pasting the rung to another ladder displays hidden parameters in the LD language editor. *[TFS 50797]*

In this release, pasting the copied rung no longer displays hidden parameters.

CAM 5

- The ISaGRAF workbench exits without saving when double-clicking an I/O device instance in a project imported from an exchange file. *[TFS 66429]*

- LD POUs containing backward jumps may execute the application in an infinite loop. *[TFS 66506]*

- FBD POUs containing backward jumps may execute the application in an infinite loop. *[TFS 66605]*

- For FBD POU bodies, incorrectly closing comments causes unexpected compiler errors. *[TFS 48610]*
  In this release, no compiler errors appear.

- When simulating a project that has a dependency on a library, error symbols for "Undefined POU" appear in the language editor even if the location of the library is defined. *[TFS 39620]*
  In this release, when simulating a project that has a dependency on a library, error symbols for "Undefined POU" do not appear in the language editor if the location of the library is defined.

- Closing a project takes excessive time compared to ISaGRAF version 6.4.1. *[TFS 61521]*
  In this release, the length of time to close a project is reduced.

- When importing a POU from a password-protected resource, an error message appears. *[TFS 62564]*
  In this release, importing a POU from a password-protected resource prompts the user to enter the password.

- The function block instance input displays incorrect values in the POU body when **Flexible Array** and **FB Parameters by Reference** in **Target Features** is set to **True**. *[TFS 55076]*
  In this release, the function block instance input displays correct values in the POU body when **Flexible Array** and **FB Parameters by Reference** in **Target Features** is set to **True**.

- Importing a project created from a previous software version that has password-protected POUs prompts the user to enter a password for each POU. *[TFS 50528]*
  In this release, importing the project from a previous software version that has password-protected POUs does not prompt the user to enter a password for each POU. Opening the POU in the language editor prompts the user to enter a password.

- Deleting an embedded user-defined function block (UDFB) displays the message "Cannot convert a complex type to a single type" in the **Output** window and displays and error message. This anomaly occurs when retaining local variables for the instance of the embedded UDFB. *[TFS 56288]*
  In this release, deleting the embedded UDFB removes the UDFB and the instance of the embedded UDFB becomes undefined.

- Opening I/O Device view and changing the I/O device selection takes excessive time for a large wired array such as [1…2000]. *[TFS 62580]*
  In this release, the I/O Device view opens in less than 30 seconds and changing the I/O device selection is faster.

- The Automation Collaborative Platform does not import a resource that has a duplicate producing group ID in the project. An error message appears. *[TFS 38447]*
  In this release, the Automation Collaborative platform supports importing a resource that has a duplicate producing group ID in the project. Entering an **ID** value in the **Properties** window for a producing group in a binding displays the message "Property value is not valid" if another producing group with the same ID exists in the resource.

- Making changes to Global Variables before performing an online change does not rebuild the project and displays incorrect variable values. *[TFS 57212]*
  In this release, making changes to Global Variables before performing an online change rebuilds the project and displays correct variable values.

- Changing the size of the dimension of an Array data type that a Structure data type uses displays an error message. Selecting the **Structures** tab in **Data Type**s closes the Automation Collaborative Platform. *[TFS 60911]*
  In this release, changing the size of the dimension of an Array data type that a Structure data type uses applies the size change.

- Selecting **Tools > Execution Order** does not display the execution order of a function block diagram in the language editor if the POU body contains an unconnected block. *[TFS 49518]*
  In this release, selecting **Tools > Execution Order** displays the execution order of a function block diagram in the language editor even if the POU body contains an unconnected block.

- Renaming a POU in a project that uses bindings and then building the project changes the configuration of the bindings of local variables. The **Error List** indicates that a variable in the binding is not found. *[TFS 55721]*
  In this release, renaming a POU in a project that uses bindings and then building the project does not change the configuration of the bindings of local variables.

- Incremental builds omit child SFC POUs with changes to global variables or data types. Anomaly first identified in ISaGRAF version 6.4. *[TFS 58701, TFS 50731]*
  In this release, incremental builds include SFC children with changes to global variables or data types. The number of child SFC POUs may affect build time.

- Copying and pasting program POUs or variables takes excessive time. Anomaly first identified in ISaGRAF version 6.5. *[TFS 50931]*
  In this release, copying and pasting POUs or variables takes a similar duration as in ISaGRAF version 6.4.1.

- Adding a POU online and then restarting the resource does not start an SFC program. *[TFS 44361]*
  In this release, adding a POU online and then restarting the resource starts the SFC program.

- **Yes to All** and **No to All** buttons do not appear when prompted to stop downloading a resource from a previously downloaded project that has multiple resources. *[TFS 40796]*
  In this release, the **Yes to All** and **No to All** buttons appear in the dialog box when prompted to stop downloading a resource from a previously downloaded project that has multiple resources.

- The ISaGRAF compiler generates unrecognized 1 GAIN LD optimization TIC codes on the ISaGRAF version 5.22 target. Anomaly first identified in ISaGRAF version 6.5. *[TFS 36948]*

In this release, the ISaGRAF compiler does not generate unrecognized TIC codes on the ISaGRAF version 5.22 target.

- Opening the Variable Selector takes excessive time. *[TFS 50229, TFS 51253]*
  In this release, opening the Variable Selector takes a similar duration as in ISaGRAF version 6.4.

- When attempting to view the cross reference for a password-protected variable, selecting **Cancel** on the **Enter Password** dialog box causes the workbench to stop responding. *[TFS 51364]*
  In this release, when attempting to view the cross reference for a password-protected variable, selecting **Cancel** closes the **Enter Password** dialog box.

- The ISaGRAF compiler miscalculates OEM parameter offsets for simple and complex I/O devices in the resource configuration file. Anomaly first identified in ISaGRAF version 6.5. *[TFS 47551]*
  In this release, the compiler correctly calculates the OEM parameter offsets for simple and complex I/O devices in the resource configuration file.

- Building and then debugging an imported project does not retain all Retained variables for non-enhanced targets. *[TFS 41358]*
  In this release, building and then debugging an imported project retains all Retained variables for non-enhanced targets. Retaining sub-variables or instances of function blocks for non-enhanced targets displays a compilation error when building and then debugging the project.

- The dictionary displays an incorrect selection in the **Retained** column for variables of an imported device or POU. *[TFS 51722]*
  In this release, the dictionary displays correct values in the **Retained** column for variables of an imported device or POU based on the **IsRetained** value in the exchange file:

  - selected: IsRetained = true for all variable subfields
  - cleared: IsRetained = false for all variable subfields
  - shaded: IsRetained = true for some variable subfields, IsRetained = false for some variable subfields

- Connection to multiple controllers fails if one of the controllers is not running. *[TFS 51688]*
  In this release, connection to multiple controllers does not fail if one of the controllers is not running.

- When stopping debugging of an online project that has SFC and other programming language breakpoints, changing a resource from stepping mode to run mode when prompted stops the resource from running. The Diagnostic tool displays the **Resource Mode** value **Break**. *[TFS 35050]*
  In this release, when stopping debugging of an online project that has SFC and other programming language breakpoints, changing a resource from stepping mode to run mode when prompted does not stop the resource from running. The Diagnostic tool displays the **Resource Mode** value **RealTime**.

- In debug mode, locking an element of a structure variable in the dictionary or **Spy List** when the **Locked Variables** window is open displays an error message and does not lock the element. *[TFS 50985]*
  In this release, locking an element of a structure variable in the dictionary or **Spy List** when the **Locked Variables** window is open locks the element.

- Adding a structure or array data type to the library and then building the project without saving the library displays an error message. *[TFS 38984]*
  In this release, adding a structure or array data type to the library and then building the project without saving the library does not display an error message.

- Building a project that contains a STRING array as a function input parameter causes a build error with address overlaps. *[TFS 49373]*
  In this release, building a project that contains a STRING array as a function input parameter does not cause a build error with address overlaps.

- Changing the index of a complex I/O device instance in a project may result to a build error. Anomaly first identified in ISaGRAF version 6.4. *[TFS 50078]*
  In this release, changing the index of a complex I/O device instance in a project does not cause a build error.

CAM 3

- Cannot lock an I/O variable with an offset is greater than 4096. The lock request is executed on the incorrect variable. *[TFS 59076]*
  In this release, the lock request executes on the correct I/O variable when the offset is greater than 4096.

- The **Network Connection** property **Stop Bits** incorrectly displays the options None, One, Two, and OnePointFive. *[TFS 51674]*
  In this release, the values are listed in numerical order and display correctly as 0, 1, 1.5, and 2.

- Renaming an ISaVIEW screen removes programs, functions, and function blocks from the project. *[TFS 62853]*
  In this release, renaming an ISaVIEW screen does not remove programs, functions, and function blocks from the project.

- The message "Would you like to build?" appears when restarting the simulation of an application that is saved and built without error, even if there are no changes to the application. This anomaly occurs if the POU body contains a function block instance and **Generate Debug Info** is set to **True** in the **Properties** window for the Function Block Diagram (FBD) or Ladder Diagram (LD) POU. *[TFS 62187]*
  In this release, the message "Would you like to build?" does not appear when restarting the simulation of an application that is saved and built without error.

- Assigning a conversion function or table to an I/O variable in the **I/O Wiring** tool does not display the assigned function after saving and re-opening the project. *[TFS 39456]*
  In this release, assigning a conversion function or table to an I/O variable in the **I/O Wiring** tool displays the assigned function after saving and re-opening the project.

- Changing the data type of a local variable of a function block and then building and simulating the application does not display updated variable values when opening the dictionary. An error message appears. *[TFS 59613]*
  In this release, changing the data type of a local variable of a function block and then building and simulating the application displays updated variable values when opening the dictionary.

- In the **Cross Reference Browser**, right-clicking a block in the **References** pane and selecting **Go to Reference** does not display the POU language editor for the block. *[TFS 46171]*
  In this release, right-clicking a block in the **References** pane and selecting **Go to Reference** displays the POU language editor for the block.

- Entering a negative value in **Cycle Timing (ms)** for a device displays an error message. *[TFS 26128]*
  In this release, entering a negative value in **Cycle Timing (ms)** does not change the value **Cycle Timing (ms)**.

- The Generate Documentation output file does not display OEM parameters of I/O devices. *[TFS 59481]*
  In this release, the Generate Documentation output file displays OEM parameters of I/O devices.

- When using a Windows 10 operating system, a project does not build if the project has an LD POU that uses a defined word. An error message appears. *[TFS 54929]*
  In this release, when using a Windows 10 operating system, having an LD POU that uses a defined word in the project does not cause an error when building.

- Cleaning a project incorrectly deletes all files with a file extension that begins with x, for example .xml and .xls, and resets the application number to 1. *[TFS 59078]*
  In this release, cleaning a project only deletes the intermediate and output files generated during the last build operation.

- Renaming the target device empties library POU bodies, which causes the project build to fail. *[TFS 59519]*
  In this release, renaming the target device does not modify POUs in the library.

- The **Error List** for build errors displays the file extension without the POU file name in the **File** column. *[TFS 43790]*
  In this release, the **Error List** for build errors displays the POU file name with the file extension in the **File** column.

- When debugging an LD program, the language editor may not display the correct line color for monitoring the function block output. *[TFS 47955]*
  In this release, the language editor displays the correct line color for monitoring function block outputs:

  - black – the output value is unavailable
  - red – the output value is true
  - blue – the output value is false

- For FBD, LD, and ST programs, double-clicking an error in the **Error List** does not highlight the variable shape that has an error in the language editor. *[TFS 55053]*
  In this release, double-clicking an error in the **Error List** highlights the variable shape that has an error in the language editor.

- The language editor is editable while in debug mode when the application cannot connect to the target. *[TFS 43579]*
  In this release, the language editor is read-only while in debug mode when the application cannot connect to the target.

- If a variable has a comment with more than 60 characters, building a project displays an error message. *[TFS 45819]*
  In this release, entering a comment to a variable displays a warning if the comment exceeds 60 characters and does not save the comment. Importing an .xls file that contains a variable comment with more than 60 characters imports the variable but clears the comment from the variable.

- If the **I/O Wiring** tool is open, downloading or simulating a project fails. *[TFS 38242]*
  In this release, if the **I/O Wiring** tool is open, it does not cause the download or simulation of a project to fail.

- Selecting **Unlock** in the **Locked Variables** viewer does not unlock the selected variables. *[TFS 38140]*
  In this release, selecting **Unlock** in the **Locked Variables** viewer unlocks the selected variables.

- Importing variables using an .xls file does not import I/O wirings of complex devices. *[TFS 45834]*
  In this release, importing variables by using an .xls file imports I/O wirings if the I/O device supports I/O wiring. A warning appears if there are invalid I/O wirings in the imported .xls file.

- Importing an ISaGRAF 3 project takes excessive time. *[TFS 46940]*
  In this release, importing an ISaGRAF 3 project takes a similar duration as in ISaGRAF version 6.4.

- Building and then simulating a project that has nested in-line function blocks displays an incorrect POU build order. *[TFS 60920]*
  In this release, building and then simulating a project that has nested in-line function blocks displays the correct POU build order.

- When building a project or library that has two local function block instances in two ST programs that have the same name, the compiler recognizes a function block instance as global instead of local. *[TFS 59634]*
  In this release, when building a project or library that has two local function block instances in two ST programs that have the same name, the error "[FB instance]: name already used for another object [FB instance]" appears in the **Output** window and error message.

- After changing the order of an I/O board instance in the I/O Wiring tool and then building the application, downloading the application to the target displays an error message. *[TFS 59119]*
  In this release, changing the order of an I/O board instance in the I/O Wiring tool and then building the application does not cause the download of the application to the target to fail.

- Renaming a wired variable that is used by a POU and then building the application does not rebuild the POUs. Downloading the application to the controller displays an error in the controller. *[TFS 58662]*
  In this release, to help prevent downloading errors, renaming a wired variable and then building the application without updating the POUs generates a build error.

- Downloading a project takes excessive time. *[TFS 46462]*
  In this release, downloading a project takes a similar duration as in ISaGRAF version 3.

- Building an imported project that has a file with a file name of more than 20 characters displays an error message. *[TFS 46516]*
  In this release, building an imported project that has a file with a file name of more than 20 characters does not display an error message.

- When debugging an LD or FBD program, the language editor may not display the correct line color for monitoring the function block output. *[TFS 47955, TFS 58350, TFS 40915]*
  In this release, when debugging an LD or FBD program, the language editor displays the correct line color for monitoring function block outputs:

  - black – the output value is unavailable
  - red – the output value is true
  - blue – the output value is false

- Changing the initial value of a variable of an FBD program and then downloading the application to the controller retains the original initial value. *[TFS 43715]*

In this release, changing the initial value of a variable of an FBD program project and then downloading the application to the controller resets the initial value to 0.

- If a project contains more than 4096 boolean variables or more than 4096 analog variables, forcing the value of a locked output variable may not change the physical value. Forcing the value of a locked input variable may incorrectly change the physical value. *[TFS 61795]*
  In this release, forcing the value of a locked output variable modifies the physical value. Forcing the value of a locked input variable does not change the physical input value and modifies the logical value.

Known Anomalies
This release has the following known anomalies.

The following list identifies the known anomalies found during testing for this release. Use the identification information provided in the brackets *[ ]* to track the anomaly in future releases or to provide to Customer Support for assistance with a related issue.

All CAMs

- When canceling the import of an exchange file, ISaGRAF displays an incorrect message while the cancelation is successful. Anomaly first identified in ISaGRAF version 6.4. *[TFS 24329]*
  There is no workaround.

- The **Dictionary** displays the incorrect lock status of variable members. Anomaly first identified in ISaGRAF version 6.3.2. *[TFS 41362]*
  To work around this issue, view the correct lock status for variable members in the **Locked Variables** viewer.

- When resetting the toolbox for FBD, LD, SFC, or ST programming languages, the icons for some or all elements may not display correctly. Anomaly first identified in ISaGRAF version 6.4.1. *[TFS 26106]*
  To work around this issue, close and reopen ISaGRAF.

- In the **Customize** dialog box for menu bar, toolbar, and context menu items, applying the **Reset All** command may cause an unexpected behavior. Anomaly first identified in ISaGRAF version 6.4.1. *[TFS 27178]*
  To work around this issue, remove the effects from having applied the **Reset All** command, reset all environment settings to the default by selecting **Import and Export Settings > Reset all settings** from the **Tools** menu.

- When generating documentation for projects, devices, and programs from the **Generate Document** window, the generated document does not contain the functions and function blocks of a library. *[TFS 44178]*
  To generate documentation for functions and function blocks of a library, copy the functions and function blocks of a library to a new project, and then generate documentation from the new project.

- Inserting a block from the **Block Library** to a function block in the FBD editor displays the **Enter Password** dialog if the function block is used in a password-protected program. Selecting **Cancel** inserts the block without the variable instance for the function block. *[TFS 55926]*

- The find and replace feature only enables using the **Find Next** and **Replace** commands with the **Current Document** option for POUs. *[TFS 25826]*
  Perform searches and replacements for a selected POU body by pressing **Ctrl+F**, then setting the **Look In** field to **Current Document** and using only the **Find Next** or **Replace** commands.

- When a project has two targets that contain the same C function blocks, changing the target displays an error when building the project. The reference data types appear undefined. *[TFS 39238]*
  Correct the data types manually.

  To work around this issue:

  1. Export the project.
  2. Create a new simulator project.
  3. Import the target definition in the new project.
  4. Change the target type of the device.
  5. Import the resource under the device.
  6. Copy and paste define words from the original project to the new project.

- Modifying the structure of a function block causes the workbench to stop responding. This anomaly occurs when an associated variable with a retained value already exists in a dictionary. *[TFS 52495]*
  There is no work around.

- The cycle overflow warning is not informative. The parameter is always 0. The resource that caused the overflow is not identified. *[TFS 44697]*
  There is no work around.

- The **Cross Reference Browser** does not display variable references located in SFC transitions. This behavior is inconsistent with the **Cross Reference Browser** behavior in ISaGRAF version 6.4. *[TFS 50453]*
  There is no work around.

- Simulation of a project does not start if the project folder name has a hyphen, for example, *Project1 - Copy*. Anomaly first identified in ISaGRAF version 6.4. *[TFS 61901]*
  To work around this issue, remove hyphens from the project folder name before simulating the project.

- Selecting the **Show Topic in Contents** button in Microsoft Help Viewer does not display the selected topic in the **Contents** tab. Anomaly first identified in ISaGRAF version 6.6.7. *[TFS 65597]*
  To work around this issue, when performing a search in **Search** tab, click the search result twice and then click the **Show Topic in Contents** button.

- The **Cross Reference Browser** may not list all variables, blocks, and defined words as used in a project if an operator and a literal value in an ST

statement do not have a space in between, for example, *myInt := 1 +2*. *[TFS 60722]*
To work around this issue, use a space between the operator and literal value in ST statements, for example, *myInt := 1 + 2*.

CAM 5

- After importing a project from an exchange file, additional I/O devices appear in Device Selector. Adding these I/O devices causes unexpected results in the application. *[TFS 67052]*
  To avoid this issue, create a project by using the required project template, and then import each device from the exchange file.

- When importing variables, no validation occurs to check that wiring definitions correspond to array dimensions or structure data types. Anomaly first identified in ISaGRAF version 6.4. *[TFS 34230]*
  To work around this issue, before importing wired array or structure variables, make sure that the number of wirings corresponds to the number of members of those variables.

- When changing a dependency path for a library, ISaGRAF may display the **Property value is not valid** message. Anomaly first identified in ISaGRAF version 6.6. *[TFS 42479]*
  To work around this issue, close and re-open the project to update the dependency path.

- For SFC and IEC 61499, elements or files may be missing when opening projects from the version source control repository. Anomaly first identified in ISaGRAF version 6.2. *[TFS 13338/33850]*
  There is no workaround.

- Initial values are not supported for Inputs of user-defined function blocks programmed in SFC. Anomaly first identified in ISaGRAF version 6.4. *[TFS 65515]*
  To work around this issue, use LD, ST, FBD user-defined function blocks..

- When updating a solution or resource from an exchange file or from a repository, the variables are missing from the variable groups. Anomaly first identified in ISaGRAF version 6.3.2. *[TFS 24302]*
  There is no workaround.

- When the compiler is unable to produce TIC code for FBD networks, the error list displays a warning message stating that the element is part of a tree not producing any code.
  To work around this issue and enable the production of TIC code, modify the network:

  - For rungs starting with a vertical bar, place a contact between the left power rail and the vertical bar. Anomaly first identified in ISaGRAF version 6.4. *[TFS 17814]*

- Resolving the logic of FBD POUs with a manual execution order may require additional kernel execution cycles compared to the automatic execution. Anomaly first identified in ISaGRAF version 6.4. *[TFS 23702]*
  There is no workaround.

- For variables using library-defined structure types with initial values, build errors occur after modifying the data types of the structure members since the initial values of these structure members are not reset after performing the modifications. Anomaly first identified in ISaGRAF version 6.5. *[TFS 38311]*
  To work around this issue, remove the incorrect initial values after modifying the data types of structure members by changing the data type of the variable to any other type and then back to the original data type.

- When downloading a new IEC application where the virtual addresses and sizes of retained variables remain the same, previously retained values for such variables may be reused. Anomaly first identified in ISaGRAF version 6.3.2. *[TFS 44581]*
  To work around this issue, avoid downloading multiple applications with the same name and virtual addresses for retained variables.

- I/O variable values are not updated when the I/O Device window is docked. Anomaly first identified in ISaGRAF version 6.4. *[TFS 23479]*
  To work around this issue, force a refresh in the window by clicking on another I/O device instance.

- When opening an FBD POU while monitoring an application, tooltips display incorrectly with the __MO_ prefix. Anomaly first identified in ISaGRAF version 6.2. *[TFS 12990]*
  There is no workaround.

- The power flow debugging coloring displays incorrectly for rejected items. Rejected items are usually variables for which ISaGRAF is unable to resolve the access path. Rejected items appear in the **Output** window. Anomaly first identified in ISaGRAF version 6.5. *[TFS 40366]*
  To work around this issue, chunk the access path for such variables using intermediary variables until producing the expected debugging behavior.

- When attempting to rename an IEC 61499 program to the same name as another existing program, an incorrect error message appears. Anomaly first identified in ISaGRAF version 6.2.2. *[TFS 51931]*
  To work around this issue, use unique names.

- The function or function block dictionary displays internal and hidden structures from the .tdb file. Anomaly first identified in ISaGRAF version 6.5. *[TFS 54287]*
  There is no workaround.

- Forcing a value on a wired structure output member that is locked overwrites only the first member of the structure. Anomaly first identified in ISaGRAF version 6.4. *[TFS 64548]*
  There is no workaround.

- When monitoring multiple projects in a solution, only one project remains monitored after a few hours. Anomaly first identified in ISaGRAF version 6.4. *[TFS 65799]*
  To work around this issue, specify the project that requires monitoring by right-clicking the project in **Solution Explorer**, and then selecting **Set as StartUp Project**.

CAM 3

- When opening a project containing ISaVIEW documents located directly under a device node, POUs are hidden for devices with names other than the default naming such as "Device1". Anomaly first identified in ISaGRAF version 6.4.1. *[TFS 43385]*

To work around this issue, perform either of these steps to ensure the complete display of elements in the Solution Explorer.

- Rename the devices to use the default naming, then close and reopen the project.
- Place the ISaVIEW documents under POUs rather than under the device node.

- Passing a MESSAGE type variable as input for a REAL standard operator may cause a runtime fault. Anomaly first identified in ISaGRAF version 6.6. *[TFS 40295]*
  To work around this issue, for the REAL operator, use any data type other than MESSAGE.

- For SFC steps and transitions, the renumbering feature applies the Sx and Tx naming convention used for CAM 5 SFC. Anomaly first identified in ISaGRAF version 6.3. *[TFS 38136]*
  There is no workaround.

- When the data value for defined words exceeds the possible value range, the compiler may not specify an out-of-range error. Anomaly first identified in ISaGRAF version 6.4. *[TFS 18134]*
  There is no workaround.

- The compiler optimization options produce incorrect TIC code. Anomaly first identified in ISaGRAF version 6.3. *[TFS 8311]*
  To workaround this issue, avoid applying these options.

- When importing variables for a function, an extra variable named 'NewVariable' is also added. Anomaly first identified in ISaGRAF version 6.5. *[TFS 38310]*
  To work around this issue, delete the extra 'NewVariable' variable.

- An SFC program in the project may cause an incorrect program execution order. Anomaly first identified in ISaGRAF version 6.5. *[TFS 64534]*
  To work around this issue, place SFC programs before ST, LD, and FBD programs in the **Programs** node in **Solution Explorer**.

Functional Changes

This release has the following functional changes from the previous release.

ISaGRAF version 6.6.8 provides the following functional changes:

All CAMs

- The **Debug** menu no longer displays the **Parallel Stacks** and **Parallel Watch** commands while the project is in simulation mode.

- Complex inputs of a user-defined function display N/A in the LD language editor.
  Previously, complex inputs of a user-defined function displayed the value OFFLINE.

- Entering a comment with more than 60 characters for an I/O channel displays the message *The maximum length for this field is 60 characters*.
  ISaGRAF prevents saving comments for an I/O channel with more than 60 characters.
  Previously, ISaGRAF accepted comments with more than 60 characters for an I/O channel. When building the project, a comment with more than 60 characters caused a build error.

- In the SFC editor, adding an LD transition creates a level 2 LD language container with a rung and a coil. The LD transition sets the following restrictions:
  - The coil cannot be deleted.
  - The coil cannot be assigned a variable.
  - A new rung cannot be added.
  ISaGRAF version 6.6.3 allows deleting empty coils and prevents assignment of variables to empty coils.

CAM 3

- The boolean variable values **MsgTrue** and **MsgFalse** are not supported.
  These variables values were supported in ISaGRAF version 3.x.x. Remove any **MsgTrue** and **MsgFalse** values before importing an ISaGRAF version 3.x.x project.

- Right-clicking a POU in **Solution Explorer** does not display **Clean**.
  In ISaGRAF version 6.3, right-clicking a POU in **Solution Explorer** and then selecting **Clean** cleans the project.

- This release does not support ISaGRAF 3 resource (*.rsc) files.

Application Notes

This release has the following application notes.

These are the application notes for ISaGRAF version 6.6.8.

Installation

Installing ISaGRAF version 6.6.8 requires a supported Windows operating system.

Prerequisites

- Verify that the computer meets or exceeds all hardware and software requirements.

To install ISaGRAF version 6.6.8

1. Install the latest Windows updates.

2. Execute **Setup.exe**, then follow the on-screen instructions.

   Tip: The following components are installed during ISaGRAF version 6.6.8 installation:

- OPC Core Components version 105
- Microsoft Visual C++ 2008 SP1 Redistributable Package
- Microsoft Visual C++ 2013 Redistributable Package
- Microsoft Visual Studio 2013 Isolated Shell
- Microsoft .NET Framework 4.7.2 (if Microsoft .Net Framework 4.5.1 or later is not yet installed)
- Microsoft .NET Framework 3.5 (if Microsoft .NET Framework 3.5 is not yet installed)

Users of previous versions

- Installing ISaGRAF on a computer that has a previous licensed version requires a new license activation. The installation process displays a message stating that ISaGRAF is running the free version. To activate ISaGRAF, contact customer support.
- Upgrading ISaGRAF applies the new communication settings defined in the OpcConfig.xml file. If experiencing communication issues, update the OpcConfig.xml file to the IxlTimeoutMultiFactor, ConnectRetryTimeInterval, and ConnectNoResponseTimeOut values defined in the previous version of ISaGRAF.
- ISaGRAF version 6.6 provides limited support (compiling POUs only) for the following:
    - The IL programming language for POUs developed in ISaGRAF version 5 or earlier.
    - IEC 61499 projects.

All CAMs

- When ISaGRAF displays a message stating that the ACP has encountered a problem, generate a report.
  When generating a report, capture and attach a screen shot. A dialog box indicates the location and name of the report to be sent to the support team
  . Close ISaGRAF without saving changes to the project and then restart ISaGRAF to avoid corrupting files.

- The Windows 8.1 x64 Russian operating system does not support the Visual Studio Isolated shell for the Russian language.
  Upon attempting to install the Russian bundle (web or full), the installation is aborted. Choose another language to proceed.

- Since ISaGRAF is powered by Visual Studio, the following limitations apply:
    - The Windows display setting must be 100% for the toolbox icons to appear complete.
    - ISaGRAF provides limited support for connection lines with corners. For imported ISaGRAF version 3 projects, FBD power flow debugging coloring does not display for connection lines with corners. Since ISaGRAF version 6.6 maintains connection links as defined by users, remove connection corners to re-establish power flow debugging.

- When using previous target versions, use data types available for these versions.
  The BYTE, USINT, INT, UINT, WORD, UDINT, DWORD, LINT, ULINT, LWORD, LREAL, and DATE data types are available for targets from version 5.0.

- The following issues are corrected by installing Visual Studio® version 2013 Update 5 available at https://www.visualstudio.com/en-us/news/releasenotes/vs2013-update5-vs:
    - The incomplete display of some or all toolbox items upon resetting for FBD, LD, SFC, or ST programming languages.
    - Online help hypertext links jumping to the top of the page rather than in the specific paragraphs.
    - The inability to set the ISaGRAF all uppercase menu to mixed case.
    - The wrongful inclusion of the non-implemented **Order Help on DVD** menu item from the **Help** menu.

- Selecting an area in the dictionary while debugging an application that contains an ST POU may cause the **Logical Value** for variables to display **WAIT**.
- The character **è**, when used in a value for a string variable in the ST POU language editor, displays as **Ã©** in the dictionary when debugging the application.
- Expanding an ANALOGALARM data type variable in the dictionary displays the hidden parameters **__ADI_OutputEnable** and **__ADI_Acknowledge**.
- The workbench does not support array dimensions for function block instances.
- The DATE variable in the dictionary is always shown in UTC. In all other places, local time appears.
- When the **Integer** selected in **Tools** > **Options** > **Projects** > **Online** is **HexaDecimal**, setting the most significant bit of a SINT variable to TRUE displays the characters FF in the **Logical Value** of the SINT variable in the dictionary. For example, 16#85 displays as 16#FF85.
  Clearing the most significant bit displays the correct **Logical Value** for the SINT variable.

CAM 5

- Monitor the complex-data type (that is, structures or arrays) input parameter of a function by assigning the input to a local variable and then monitoring that local variable.
- The ISaGRAF Free Runtime on Windows 8 or 10 uses the following directories:
    - Installing executable files (including ISaGRAF.exe):
      %PROGRAMFILES%\ISaGRAF\6.6\CAM ISaGRAF 5\5.3\ISaGRAF Free RunTime

    - Downloading application files:
      %LOCALAPPDATA%\VirtualStore\Program Files (x86)\ISaGRAF\6.6\CAM ISaGRAF 5\5.3\ISaGRAF Free RunTime

- On Windows 8.1 and 10, standard users cannot run the ISaGRAF Free runtime. Without administrator privileges, the runtime does not allow downloading files.
- When naming projects, devices, resources, and POUs (Program, Function, and Function Block), avoid applying names with more than 32 characters since this may exceed the maximum path names supported by the Windows operating systems.
- The Matrix function block is incompatible with the failover runtime.
  A protection mechanism prevents using the Matrix block with the failover. Instead, use the Matrix2 function block.

- When IXL communication with a target fails, do the following:
    1. Start simulation from the toolbar.

    2. Make sure that **OPC Core components redistributable** item is installed from the Windows Add/Remove Programs feature.

    3. Modify the **TargetPortNumber** property in the OpcConfig.xml file to match the port number defined for your runtime application (for example, isagraf.ini). When running ISaGRAF runtime on a quad core computer system, set the CPU affinity to one core.

- Importing target definition (*.tdb) files requires an Administrator account.
- Building a project generates a build error if a resource contains extended OEM parameters with a decimal or hexadecimal format.
- For variables using library-defined structure types with initial values, build errors occur after modifying the data types of the structure members since the initial values of these structure members are not reset after performing the modifications.
  To work around this issue, remove the incorrect initial values after modifying the data types of structure members by changing the data type of the variable to any other type and then back to the original data type.

- The ISaGRAF workbench compiles projects that contain initial values in hexadecimal, octal, or binary formats, and generate code.
  To edit existing hexadecimal, octal, or binary initial values in the Dictionary, convert the initial values to decimal format.

- The Dictionary displays a yellow warning symbol on the inputs and outputs of functions or function blocks that use the same name and alias.
  To remove the warning, rename the alias. Renaming the alias does not affect the built application.

- The **Output** window displays error messages when monitoring a non-user-declared instance of a function block.
  To remove the error message, all function blocks used in an application must have a declared instance in the Dictionary.
  To create an instance in the Dictionary, in the language editor, double-click the non-user-declared instance of the function block and then select **OK** in **Block Selector**.

CAM 3

- ISaGRAF reserves the CAM 3 project folders for exclusive usage. Place supplementary files elsewhere than a CAM 3 project folder.
- For the ISaGRAF 3 target on Windows 8 or Windows10, ISaGRAF uses the following directories:
  - Installing executable files (including start tcp.cmd):
    %PROGRAMFILES%\ISaGRAF\6.x\CAM ISaGRAF 3\Simul

  - Downloading application files:
    %LOCALAPPDATA%\VirtualStore\Program Files (x86)\ISaGRAF\6.x\CAM ISaGRAF 3\Simul

- ISaGRAF is unable to load projects that have invalid names.
  Valid project names must begin with letters followed by letters, digits, and single underscore characters. Names cannot be reserved words or data types (defined words or arrays).

- ISaGRAF version 6 does not support projects with SFC macro steps: macro beginning steps, macro steps, and macro ending steps.
- The **Cross References Browser** does not display cross references for CAM 3 SFC POUs.
- ISaGRAF does not support importing ISaGRAF version 3 projects into the same folder where the *.hie file is located.
- Device names with more than eight characters cause compilation errors since ISaGRAF version 3 device names have a maximum of eight characters.
- ISaGRAF does not instantiate unused variables in the runtime. The values of such variables appear as Offline.
- ISaGRAF provides limited support for product language localizations other than English.
- To enable simulating CAM 3 projects, run ISaGRAF with administrator privileges.
  From the Start menu, locate and right-click **Automation Collaborative Platform**, and then click **Run as administrator**.

Migrate ISaGRAF Version 3.x.x Projects

- When importing a project, change the default name *Device1* to the same name as the downloaded application to debug the application.