



iTest 4.3 What's New

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Overview



New Features for iTest 4.3 include:

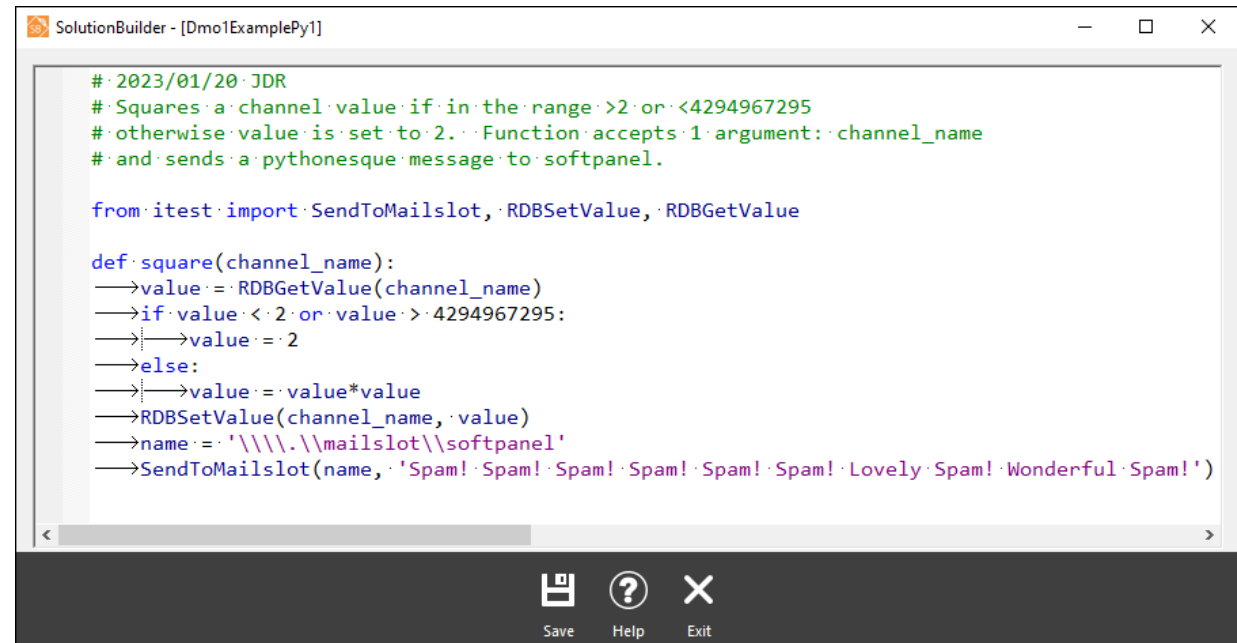
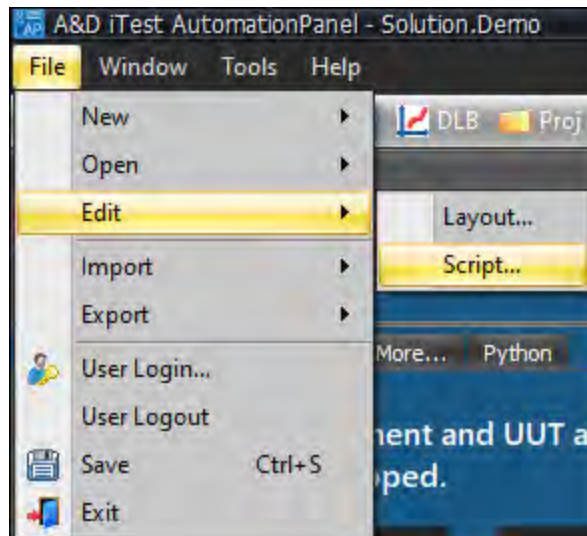
- AutomationPanel Updates
- Modularity Support in SolutionBuilder
- Driver Updates
- iTest.BTS Updates

New SolutionBuilder editors:

- Blackbox Settings
 - Calculations
 - Data Quality Groups
 - Dynamic Calculations
 - Map Tables
 - Plot Buffer
 - Set Value Tables
 - TopBar
-

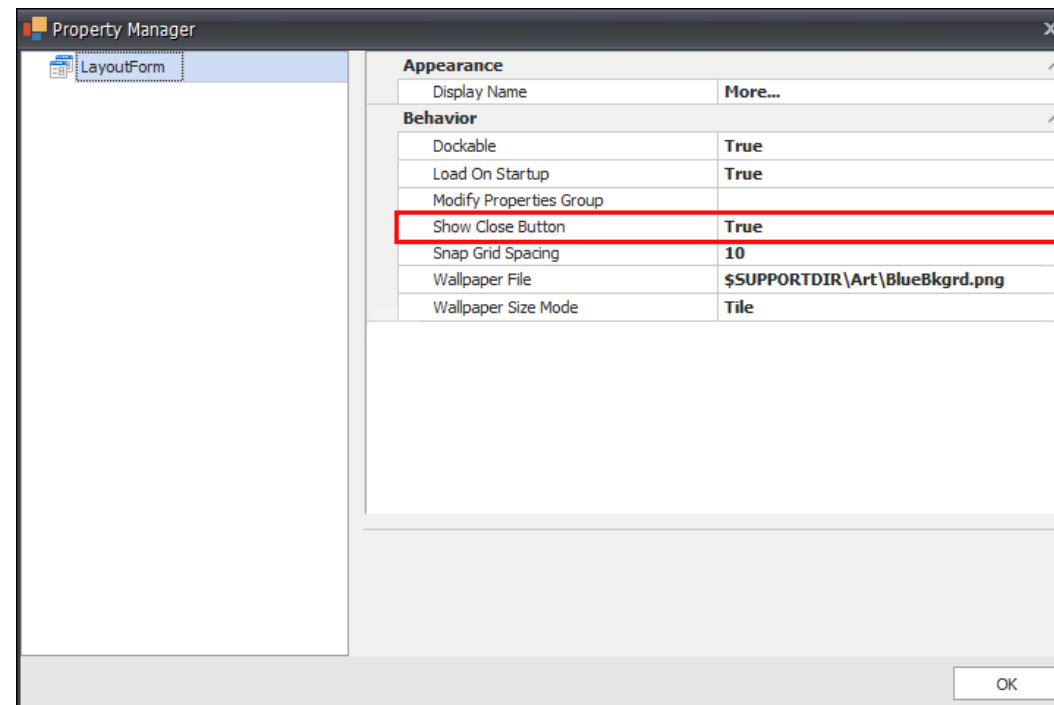
AutomationPanel: Editing Python Scripts

Python scripts can easily be edited in AutomationPanel by selecting the **File > Edit > Script** menu option. Alternatively, you can send the following command-line argument: **\$EXECUTE;SolutionBuilder.exe \$SUPPORTDIR\PythonScripts\%<FileName>%,** where <FileName> is the name of the python script. Both options open a specified python script in SolutionBuilder's Scripts editor.



AutomationPanel: Show Close Button

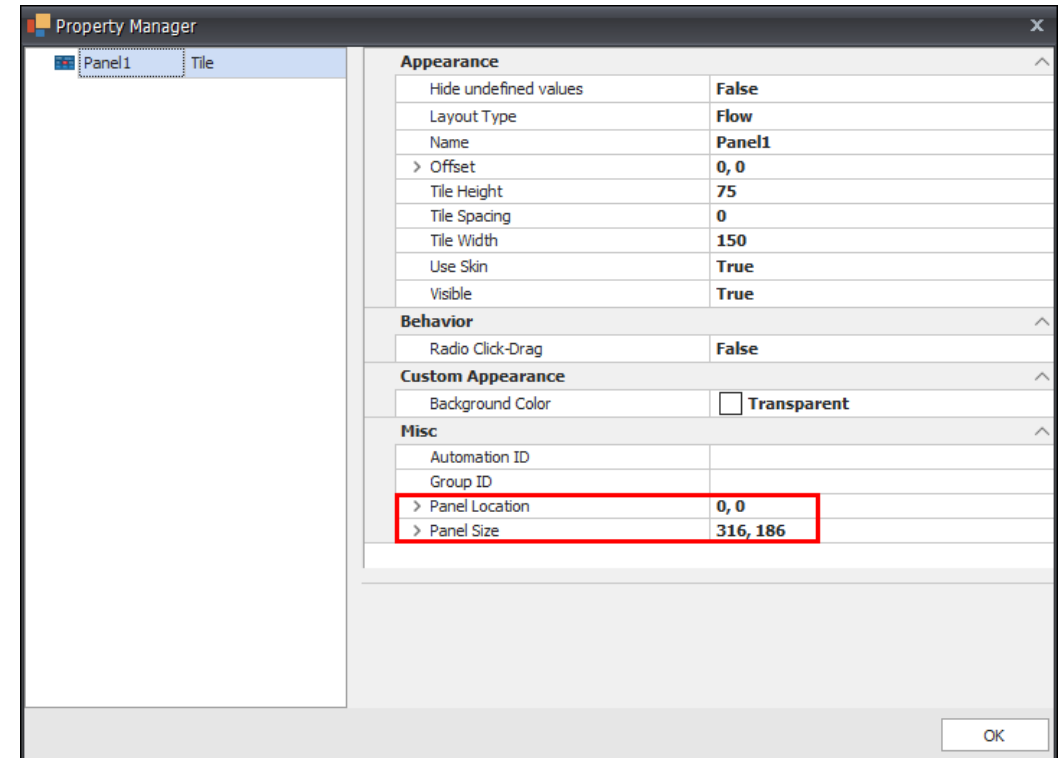
The **Show Close Button** property allows you to show/hide the close button for a floating layout. This property is only available in the Property Manager for floating layouts in AutomationPanel.



AutomationPanel: Panel Location and Size



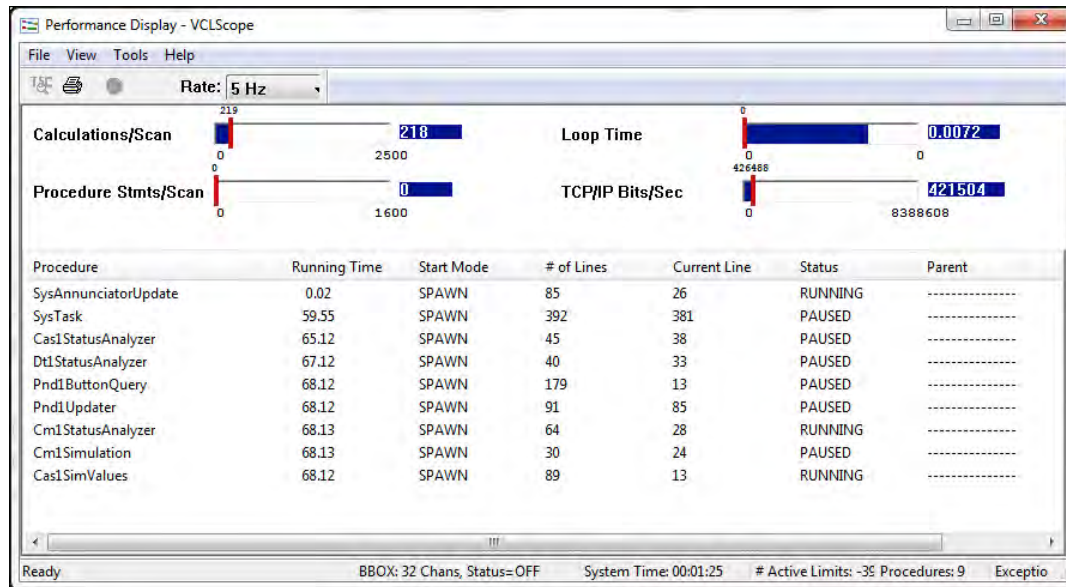
- Panels now include the **Panel Location** and **Panel Size** properties.
- The **Panel Location** property specifies the X,Y coordinates of the upper left-hand corner of the panel. These coordinates are two numeric values separated by a comma (e.g., 0,0).
- The **Panel Size** property specifies the size of a panel.



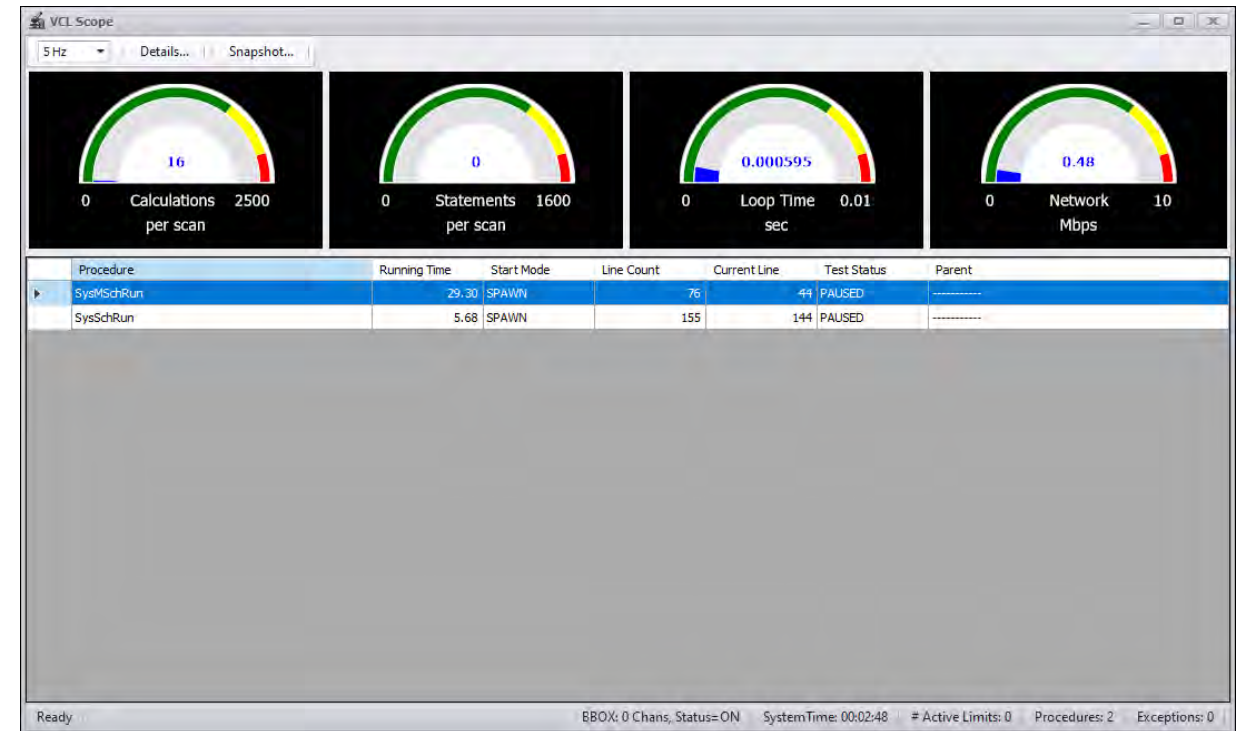
AutomationPanel: Test Status Display

The Test Status Display interface has been updated.

Previous Test Status Display Interface



New Test Status Display Interface



SolutionBuilder: Modular Support

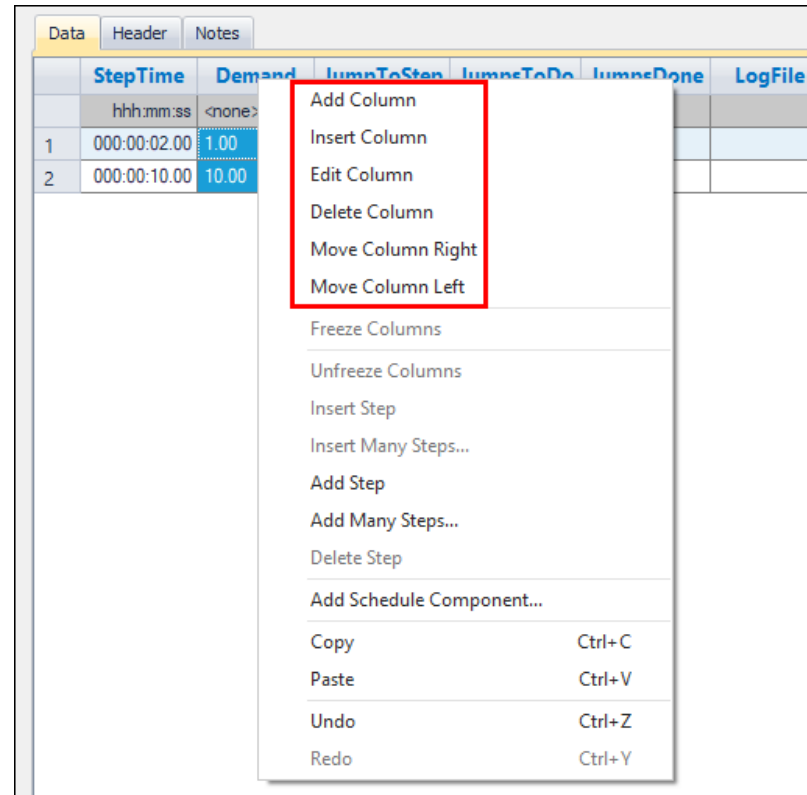


- SolutionBuilder now supports modularity. For each editor, the left pane is organized by module and is displayed in a tree bar view. In addition, there is a range of tools that support modular solution development.
 - When adding new items to a module folder, the module ID is automatically added to the name of the new item. For example, if adding a new layout to a module named “Dmo1.BasicDemo,” the new layout will be named “Dmo1NewLayout1.”
 - The following tools are used to support modular development:
 - The ability to open each solution module and see a tree view of the files.
 - The ability to select a module file and edit it in SolutionBuilder if the editor is available.
 - The ability to use various right-click options such as **Add**, **Remove**, **Rename**, etc. for each solution module.
 - The ability to open and edit individual modules. When opening SolutionBuilder, you can select a module to edit in the Select Support dialog. The applicable editors will be available for the module.
-

SolutionBuilder: Column Creation

In the Schedules editor, the following options are available to add, edit, delete, and reorder columns:

- Add Column
- Insert Column
- Edit Column
- Delete Column
- Move Column Right
- Move Column Left



SolutionBuilder: Blackbox Settings

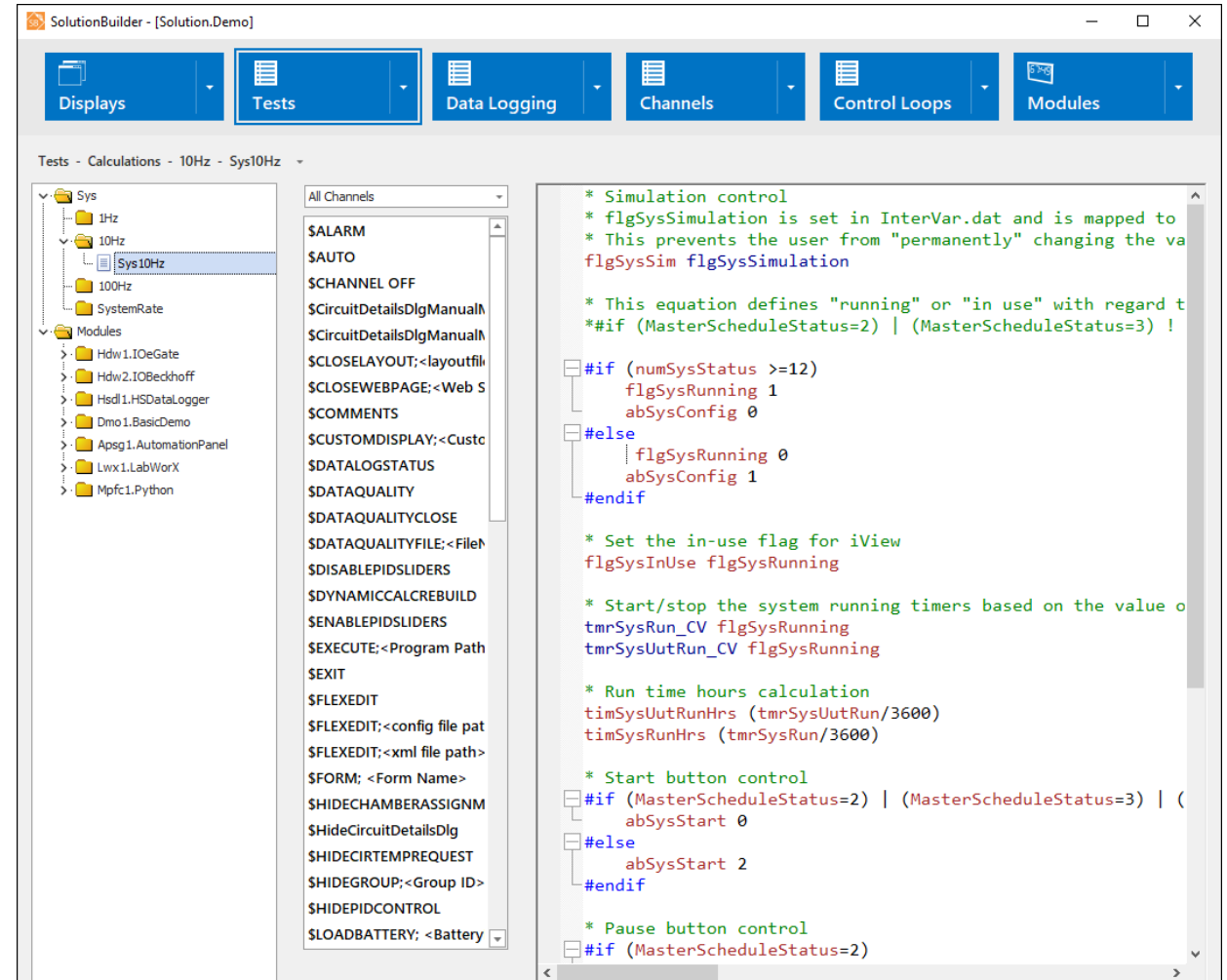
Blackbox settings can now be edited via SolutionBuilder's Blackbox Settings editor.

The screenshot shows the 'SolutionBuilder - [Solution.Demo]' application window. The top navigation bar contains six blue buttons: 'Displays', 'Tests', 'Data Logging' (which is highlighted with a white border), 'Channels', 'Control Loops', and 'Modules'. Below the navigation bar, the main content area is titled 'Data Logging - Blackbox Settings'. It contains two radio button options: the first is selected and labeled 'Log on limit enable, trigger on limits violation', and the second is labeled 'Log on CRS_CONTROL=1, trigger on CRS_CONTROL=0'. Under the first option, there are two input fields: 'Pre-trigger' with a value of '10' and unit 's', and 'Post-trigger' with a value of '5' and unit 's'. Under the second option, there is a 'File Size' input field with a value of '5' and unit 'min'. At the bottom, there is a 'General' section with a checked checkbox 'Save black box on new project creation' and a 'Rate' input field with a value of '10' and unit 'Hz'.

SolutionBuilder: Calculations Editor



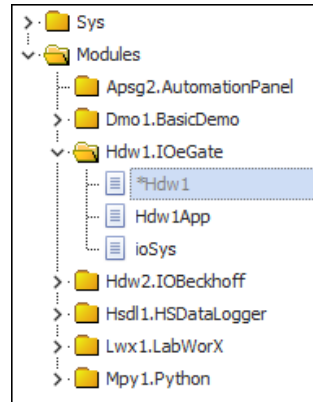
The Calculations editor can be used to manage calculations, which are a series of formulas that are performed during system scans. These can be logged, displayed, and verified for limits and quality.



SolutionBuilder: Channel Definitions Editor



- The Channel Definitions editor now contains a vertical grid editor that allows you to edit a selected channel.
- In addition, inactive channel definition files appear in gray font in the left pane.



Channels - Definitions - Sys - Sys

Channel Name	Physical Ch...	Channel Type	Units Label	Decimal Point	Limits Active
flgSysActo...	0	Virtual Output		0	No
flgSysActive	0	Virtual Output		0	No
flgSysBusy	0	Virtual Output		0	No
flgSysFault	0	Virtual Output		0	No
flgSysInRead	0	Virtual Output		0	No
flgSysInUse	0	Virtual Output		0	No
flgSysRunning	0	Virtual Output		0	No
flgSysRunti...	0	Virtual Output		0	No
flgSysSim	0	Virtual Output		0	No
flgSysSoun...	0	Virtual Output		0	No
numSysFaul...	0	Virtual Output		0	No
numSysFEST...	0	Virtual Output		0	No
numSysHar...	0	Virtual Output		0	No
numSysHW...	0	Virtual Output		0	No
numSysIdle...	0	Virtual Output		0	No
numSysVie...	0	Virtual Output		0	No
numSysMod...	0	Virtual Output		0	No
numSysMod...	0	Virtual Output		0	No
numSysMod...	0	Virtual Output		0	No
numSysMod...	0	Virtual Output		0	No
numSysMsg...	0	Virtual Output		0	No
numSysRes...	0	Virtual Output		0	No
numSysSetti...	0	Virtual Output		0	No

Channel Name	flgSysActionComplete
Physical Channel	0.000000
Channel Type	Virtual Output
Units Label	
Decimal Point	
Limits Active	
Low Limit Action	None
Low Warning Action	None
High Warning Action	None
High Limit Action	None
Low Limit	0.000000
Low Warning	10.000000
High Warning	90.000000
High Limit	100.000000
Low EU	0.000000
High EU	100.000000
Hardware Configu...	
Low Rail	0.000000
High Rail	10.000000
Data source	
User Defined 1	0.000000
Alias	
Description	1 = SystemAction co...
Low Limit Ignore Ti...	0.000000
High Limit Ignore T...	0.000000
Statistics Available	
Statistical Window	10.000000
Stability Tolerance	-999.000000
Setpoint	
Std Tolerance	-999.000000

Home Open Save Save As Export Run Find Build Report Help Exit

SolutionBuilder: Data Quality Groups Editor



The Data Quality Groups editor can be used to manage data quality groups, which are used to define different high and low data quality values during various stages of a test.

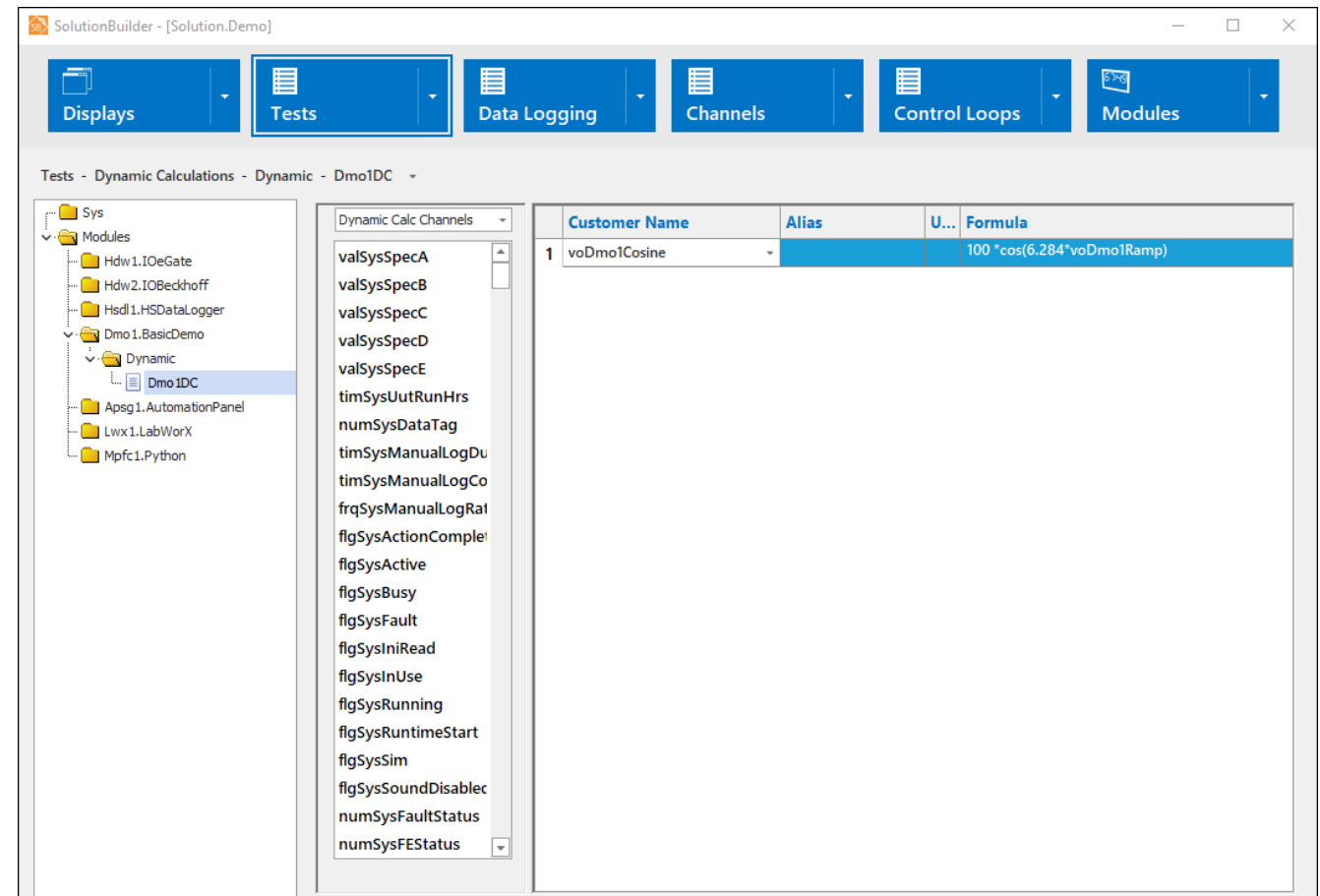
The screenshot shows the SolutionBuilder - [Solution.Demo] window. The top navigation bar includes buttons for Displays, Tests, Data Logging, *Channels (highlighted), Control Loops, and Modules. Below the navigation bar, the breadcrumb path is Channels - Data Quality Groups - Sys - NewDataQualityGroup1. The main area displays a tree view on the left with 'Sys' expanded, showing 'NewDataQualityGroup1'. To the right, a table lists the data quality groups.

Channel	Status	Low	High	Sigma Value
*voDmo1Err	Inactive	0	1	0.5

SolutionBuilder: Dynamic Calculations Editor



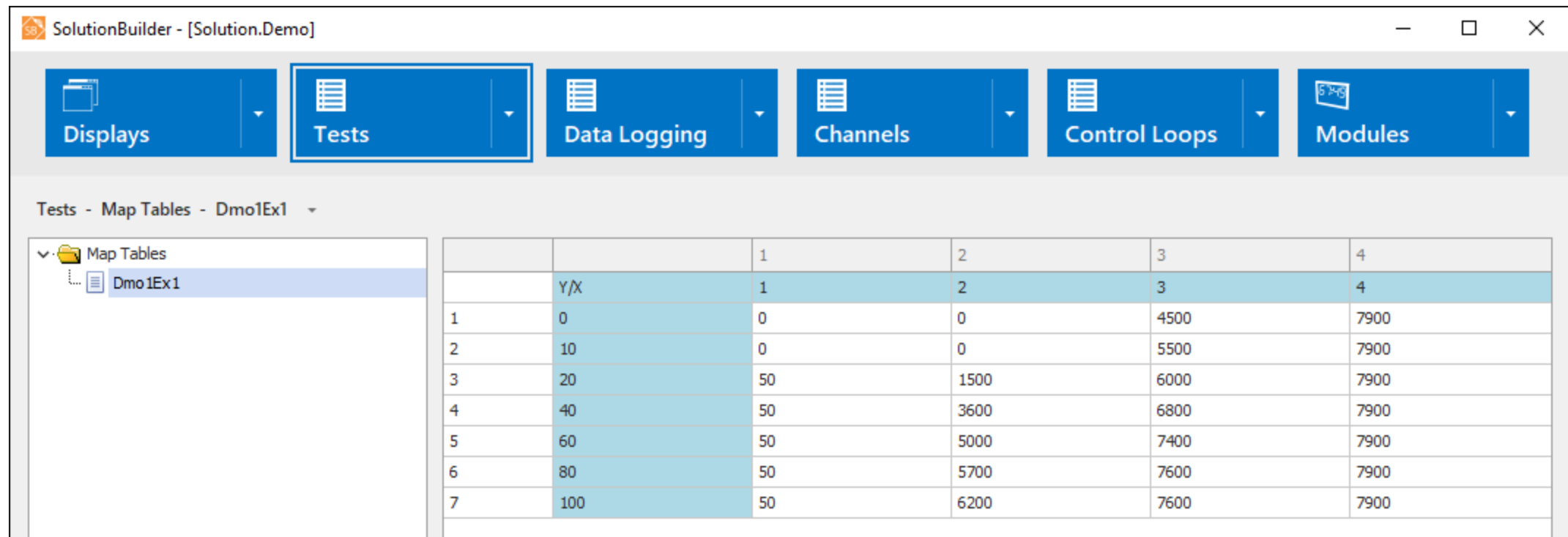
Dynamic calculations can be managed using SolutionBuilder's Dynamic Calculations editor. These are run independently and asynchronously to the real-time system, allowing you to perform modifications to the calculation file while it is actively running without affecting the test system.



SolutionBuilder: Map Tables Editor



Map tables can be managed using the Map Tables editor in SolutionBuilder. This editor allows you to create and edit map tables. In addition, you can copy and paste values from other spreadsheets into this editor.

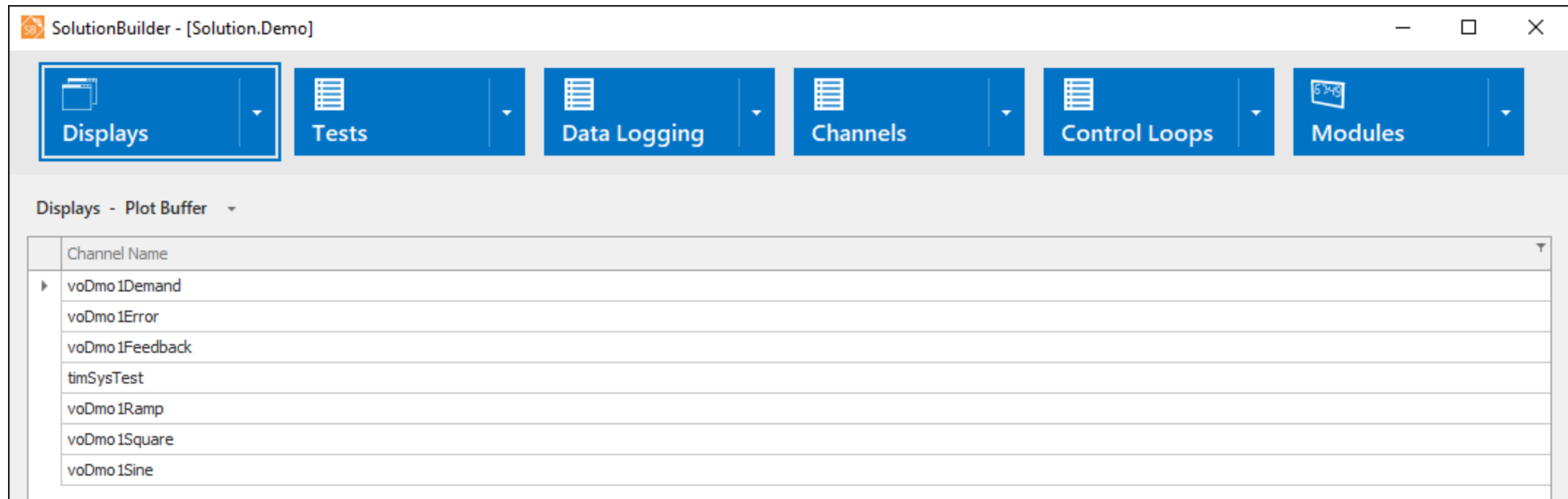


The screenshot shows the SolutionBuilder application window with the title bar 'SolutionBuilder - [Solution.Demo]'. The top menu bar contains six buttons: 'Displays', 'Tests', 'Data Logging', 'Channels', 'Control Loops', and 'Modules'. The 'Tests' button is highlighted with a blue border. Below the menu bar, the breadcrumb path 'Tests - Map Tables - Dmo1Ex1' is displayed. On the left, a tree view shows 'Map Tables' expanded, with 'Dmo1Ex1' selected. The main area displays a table with 6 columns and 8 rows. The first column is an index (1-7), the second is 'Y/X' (0-100), and the next four columns are numerical values.

		1	2	3	4
	Y/X	1	2	3	4
1	0	0	0	4500	7900
2	10	0	0	5500	7900
3	20	50	1500	6000	7900
4	40	50	3600	6800	7900
5	60	50	5000	7400	7900
6	80	50	5700	7600	7900
7	100	50	6200	7600	7900

SolutionBuilder: Plot Buffer Editor

The Plot Buffer editor can be used to manage channels for the high-speed circular buffer.



SolutionBuilder: Set Value Tables Editor



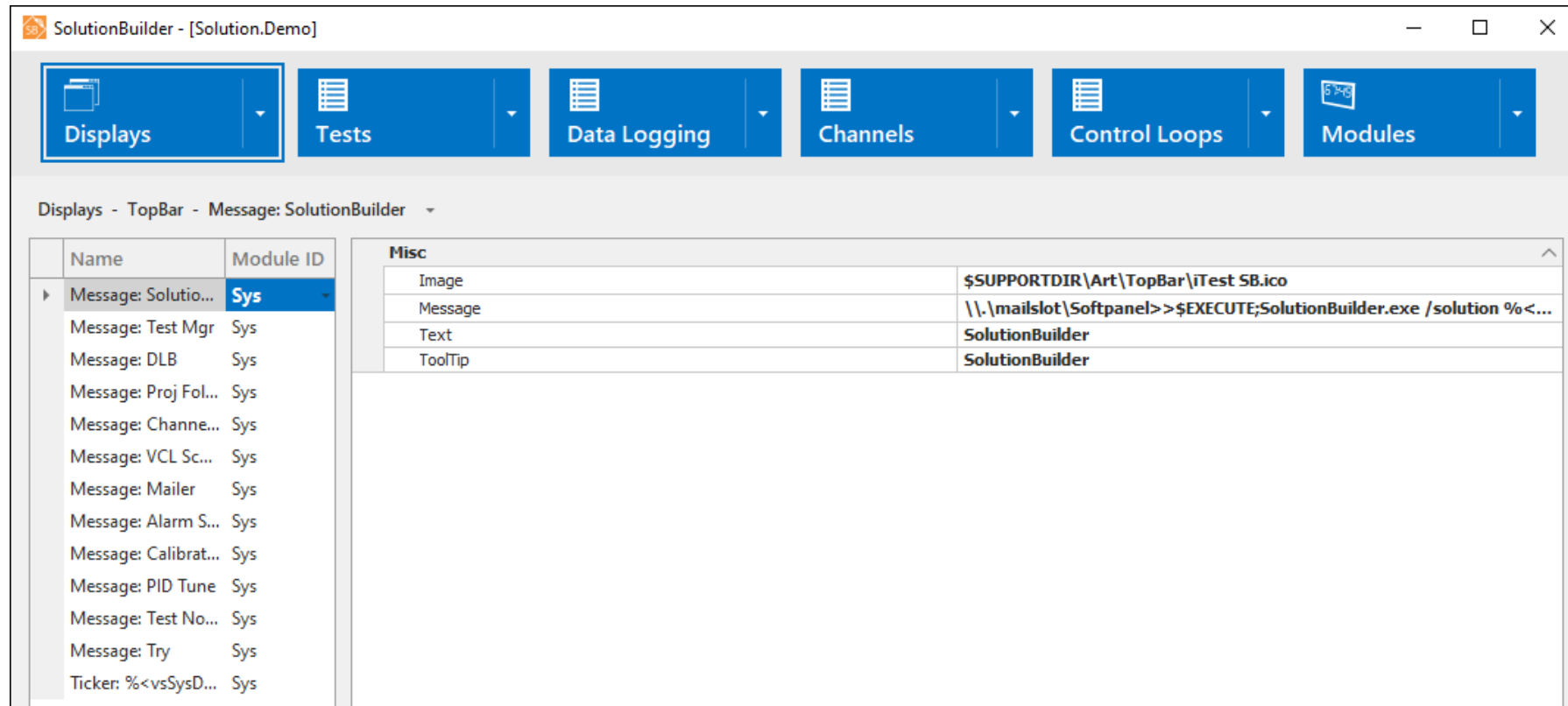
The Set Value Tables can be used to manage set value tables. These tables are named sequences of values that change according to specified delay times.

The screenshot shows the SolutionBuilder - [Solution.Demo] window. The top toolbar contains buttons for Displays, *Tests (highlighted with a red box), Data Logging, Channels, Control Loops, and Modules. Below the toolbar, the breadcrumb path is Tests - Set Value Tables - Sys - NewSetValueTables1. The left sidebar shows a tree view with Sys and Modules folders. The Sys folder contains *NewSetValueTables1. The Modules folder contains several sub-folders: Hdw1.IOeGate, Hdw2.IOBeckhoff, Hsdl1.HSDataLogger, Dmo1.BasicDemo, Apsg1.AutomationPanel, Lwx1.LabWorX, and Mpy1.Python. The main area displays a table with three columns: Delay, Channel Name, and Set Value. The table has one row with the values +0.00, , and 0.0.

Delay	Channel Name	Set Value
+0.00		0.0

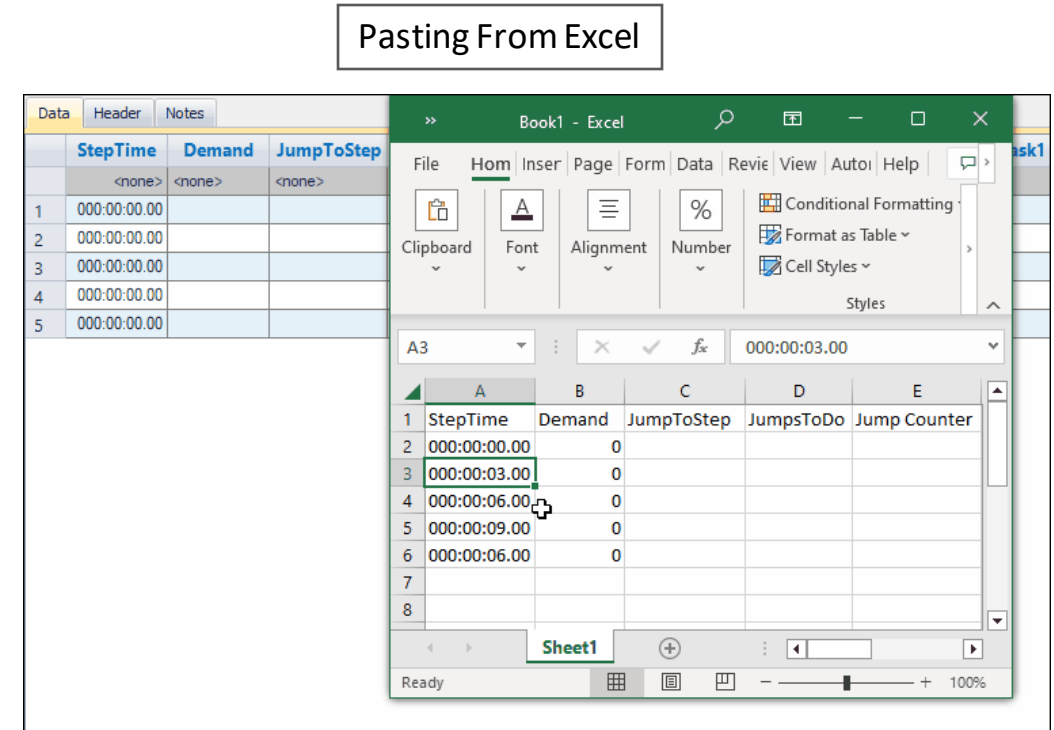
SolutionBuilder: TopBar Editor

AutomationPanel TopBar items can now be added, removed, or edited in SolutionBuilder via the TopBar editor.



SolutionBuilder: Additional Features

- The following features have been added to SolutionBuilder:
 - **Legacy Limits:** Using legacy limits will place the Limit Groups editor into read-only mode.
 - **Pasting From Excel:** In the Schedules editor, you can copy/paste values from an Excel spreadsheet into your schedule.
 - **Previewing Layouts:** In the list of layouts, you can view a preview of each layout by hovering over the layout name. The first time you use the Layouts editor, a placeholder image displays for the image of the layout.
 - **Ramp Value:** In the Schedules editor, you can enter a numeric value or a virtual output channel name in the **Ramp Value** column. Alternatively, you can use the drop-down list to select a virtual output channel. The values in this column are read at runtime when the schedule is started or restarted.



Driver Updates

- iTest 4.3 includes the following driver updates:
 - **EtherCAT XML Repository:** The ETHERCATMLDIR *config.ini* setting has been added. This setting allows you to specify the path to the EtherCAT XML repository.
 - **New Drivers:** The AndBalance and KikusuiCycler drivers are now available.
 - **XCP Master Ethernet Support:** The XCP Master driver now supports Ethernet communication. Ethernet communication can be configured by editing the **Ethernet IP Address 1** and **Ethernet Port** settings.

XCP Master Ethernet Support

Device ID	3
Property	Value
General	
Enabled	AUTO LAUNCH
Load File	XcpMaster.exe
Debug	
Log Level	Low
iTest Channels	
Watchdog Channel	XcpWatchdog1
Status Channel	XcpStatus1
Other	
Protocol	UNUSED
A2L File	
MAP File	
Seed and Key File	From A2L
Use STIM Lists	TRUE
XCP on CAN	
Serial Number	
CAN Bus	HS1
Frame Type for CAN	UNUSED
CAN 1 Bus Speed	From A2L
CAN 1 Master ID (CRO)	0
CAN 1 Slave ID (DTO)	0
XCP on TCP	
Ethernet IP Address 1	
Ethernet Port	
Mapping	
Database File	XcpMaster1.fil

Advanced

BTS: Alternate BMS Modules



- iTest.BTS now includes 2 additional BMS modules that can support up to 4 circuits and 4 CAN buses per circuit based on your system's configuration.

Module	Circuit Configuration
Bms1.4C.8B.CanNeo0 - 4 Circuit 8 Bus	Circuit 1 > CanNeo0_HS1, CanNeo0_HS2 Circuit 2 > CanNeo0_HS3, CanNeo0_HS4 Circuit 3 > CanNeo0_HS5, CanNeo0_HS6 Circuit 4 > CanNeo0_HS7, CanNeo0_MS
Bms2.4C.8B.CanNeo1 - 4 Circuit 8 Bus	Circuit 1 > CanNeo1_HS1, CanNeo1_HS2 Circuit 2 > CanNeo1_HS3, CanNeo1_HS4 Circuit 3 > CanNeo1_HS5, CanNeo1_HS6 Circuit 4 > CanNeo1_HS7, CanNeo1_MS

BTS: Barcode Reader Module



iTest.BTS now includes a Barcode Reader Module to aid in End of Line (EOL) testing. This module utilizes iTest's Barcode driver, and you can manually enter battery barcodes in case a physical barcode reader is not available. With this module, you can scan a battery barcode to automatically load battery details and start testing on a specified circuit.

The screenshot displays the iTest.BTS software interface. The top section, titled "Control Circuits", shows a table of active circuits. The bottom section, titled "System Messages", shows a log of system events.

Start	Stop	Pau...	Next	Details	Scan	Circuit...	vsCctStatus	vsCycler...	Current	Voltage	Power	Amphrs	Watt...	tBatt	Step	StepTimer	vsBattID	Circuit	Tests	View ...	Battery Spec	
						Cct01	1	Idle	Rest	0.000	2.890	0.000	0.11	0.00	25.0	2	00:00:03	SN1234-BM1234	Active	Dischg-Chg		Battery 1C
						Cct02	2	Idle	Rest	0.000	3.600	0.000	1.10	0.00	25.0	-1	00:00:05	Demo-1	Active	Charge		Battery 1C
						Cct03	3	Complete	Rest	0.000	3.600	0.000	0.00	0.00	25.0	-1	00:00:10	None	Active	Rest		Battery 1C
						Cct04	4	Idle	Rest	0.000	0.000	0.000	0.00	0.00	25.0	0	00:00:00	None	Active	None		None

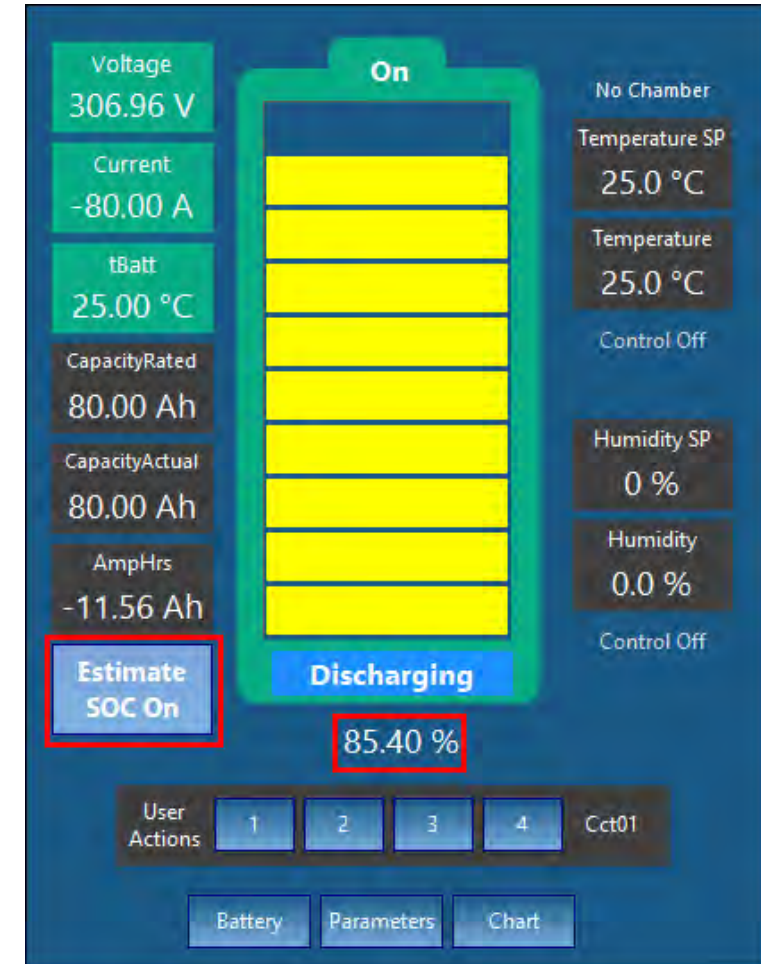
Schedule Name	Battery ID	Circuit	Data File Name	Step #	Step Time	Schedule Time	Step Time Left	Status
Charge	Demo-1	Cct02 (2)	SN1234-BM1235_Dischg-Chg...		00:00:05	00:00:00	00:00:00	Idle

Mode	Current	Voltage	Power	Setpoint Options	ResetAhWh	ResetOthers	Limits	Log Time	Log Text	Jump To	Jumps	Jump Counter	Capacity	Temperature	Humidity	Step Time
1	<none>	<none>	<none>		<none>	<none>	<none>	<none>	<none>	<none>	<none>	<none>	<none>	<none>	<none>	<none>
Rest							On:RunLast...	0.1	Rest						-1	5.00
2	Charge	iCRateCharge	vcRateCha...	pwrCRateC...	Yes	All	On:RunLast...	0.1	C-rate char...						-1	0.00
3	Rest						On:RunLast...	0.1	Rest						-1	5.00
4	Rest						Off	60.0	Test End						-1	5.00

Time	Source	Message
03/01/2023 11:28:45	AUTOTEST	End procedure CctLimitsUser(3)
03/01/2023 11:28:45	AUTOTEST	End procedure CctLimits(3)
03/01/2023 11:28:45	AUTOTEST	End procedure CctCyclerShutdown
03/01/2023 11:28:45	AUTOTEST	End procedure CctSchMain(3)
03/01/2023 11:28:45	AUTOTEST	Begin procedure UserStop(3)
03/01/2023 11:28:45	AUTOTEST	End procedure UserStop(3)

BTS: Estimate SOC

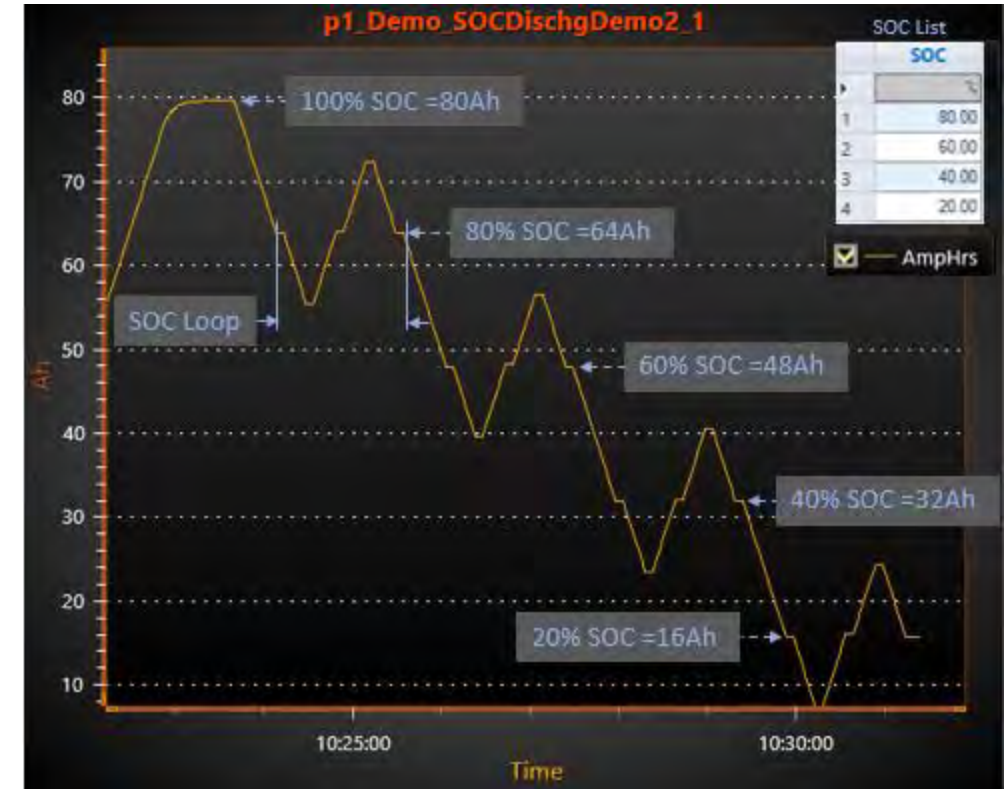
- Map tables are now available to be used in iTest.BTS, and these tables are managed via SolutionBuilder's Map Tables editor. These tables can be used continuously (by directly assigning channels) or as part of a procedure.
- iTest.BTS includes the *Cell_OCVtoSOC_Demo* and *Pack_OCVtoSOC_Demo* map tables to estimate the battery SOC while in demonstration mode. These tables are utilized in the *SOCLookup.tsc* procedure, where the estimated SOC is displayed via the **Estimate SOC On/Off** button.



BTS: Repeated Use of SOC Target in a SOC Loop



- Two new parameters have been added to iTest.BTS to aid in monitoring SOC. These parameters are:
 - **socTarget:** Last SOC target in percent. This is read from the SOC list.
 - **socTargetAh:** Last SOC target in Ah. This is calculated by Schedule Runner using the SOC list value.
- The SOC target value is read from the SOC list at the beginning of the loop, and this value is used multiple times within the loop. iTest.BTS includes the *Demo\SOCDischgDemo2* schedule to demonstrate this behavior.



BTS: Softpanel Messages



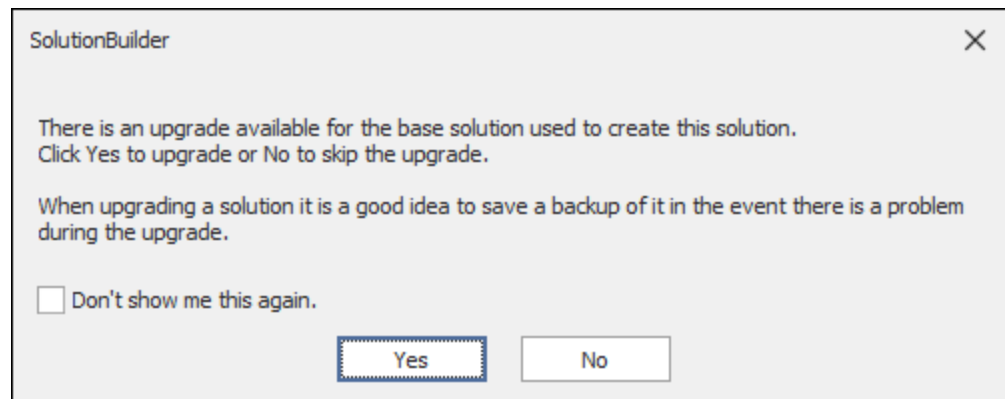
The following Softpanel messages have been added to iTest.BTS:

Message	Description	Syntax
\$CircuitMonitorLoadBatterySpec	Loads a battery spec file into the Circuit Monitor.	\$CircuitMonitorLoadBatterySpec;<CircuitIndex>;<BatterySpecFileName>;<StatusChannel>
\$CircuitMonitorLoadTest	Loads a schedule or master schedule file into the Circuit Monitor.	\$CircuitMonitorLoadTest;<CircuitIndex>;<TestFileName>;<StatusChannel>

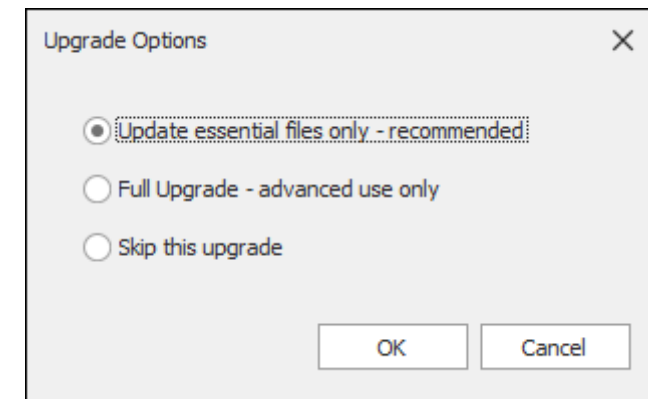
BTS: Upgrading Solutions

- SolutionBuilder includes the option to upgrade your existing solution during the patching process via the Solution Upgrade Options dialog.
- This dialog has been updated to allow you to only update essential files, update all files, or skip the upgrade. In addition, a backup copy of the solution is automatically created during the upgrade process.
- The success of the solution upgrade depends on the amount of customization after the solution's initial creation, so these changes increase the likelihood that the process is successful.

Previous Solution Upgrade Options Dialog



New Solution Upgrade Options Dialog



BTS: Additional Features



- The following features have been added to iTest.BTS:
 - **DataTag Parameter Markers:** The **DataTag** parameter has been expanded to include markers useful for understanding data collected during a test. For example, when a test step is stopped, the **DataTag** parameter value is set to 16 to indicate that the step was stopped.
 - **Exporting/Importing BMS Mapping:** The **Export BMS Mapping...** and **Import BMS Mapping...** options allows you to export a circuit's BMS mappings to a ZIP file as well as import the BMS mapping to a different circuit.
 - **Introduction to Python:** The Python programming language has been integrated into iTest.BTS. This language supplements the existing VCL by enabling additional system automation using a common and contemporary coding language.
 - **Show Scan Column:** The **Show Scan Column** property has been added to the Circuit Monitor panel. This property allows you to show/hide the **Scan** column for the circuit.
 - **Step Timer:** The **Step Timer** column has been added back to iTest.BTS schedules.
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Compatibility and Product Life Cycle Matrixes



iTest to OS Compatibility Matrix

iTest to OS Compatibility	Windows	Test Automation											
		iTest 4.3	iTest 4.2	iTest 4.1	iTest 4.0	iTest 3.9	iTest 3.8	iTest 3.7	iTest 3.6	iTest 3.5	iTest 3.4	iTest 3.2	iTest pre 3.2
GUI OS	Windows 11 Pro	✓	✓	X	X	X	X	X	X	X	X	X	X
	Windows 10 Pro	✓	✓	✓	✓	✓	✓	✓	X	X	X	X	X
	Win 7 Pro 64bit	X	X	X	✓	✓	✓	✓	✓	✓	✓	X	X
	Windows XP	X	X	X	X	X	X	X	X	X	✓	✓	✓
RTOS	Xenomai	✓	✓	✓	✓	✓	X	X	X	X	X	X	X
	INtime 7.X	✓	X	X	X	X	X	X	X	X	X	X	X
	INtime 6.3	✓	✓	✓	✓	✓	✓	✓	X	X	X	X	X
	INtime 5.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X
	INtime 4.2	X	X	X	✓	✓	✓	✓	✓	✓	✓	X	X
	INtime 3.13	X	X	X	X	✓	✓	✓	✓	✓	✓	✓	X
	VxWorks (VM4500)	X	X	X	X	X	X	X	X	✓	✓	✓	✓
Legend													
Supported									✓				
Not Compatible									X				

Compatibility and Product Life Cycle Matrixes



OS to RTOS Compatibility Matrix

OS to RTOS Compatibility	Windows	RTOS				
		INtime 7.X	INtime 6.X	INtime 5.2	INtime 4.2	INtime 3.13
Host OS	Windows 11 Pro	✓	X	X	X	X
	Windows 10 Pro	X	✓	X	X	X
	Win 7 Pro 64bit	X	✓	✓	✓	X
	Windows XP	X	○	○	○	✓
Legend						
Supported				✓		
Not Compatible				X		
Unsupported but should work				○		

Compatibility and Product Life Cycle Matrixes

RTOS to PC Compatibility Matrix

RTOS to PC Compatibility	Windows	RTOS				
		INtime 7.X	INtime 6.X	INtime 5.2	INtime 4.2	INtime 3.13
PC	HP 1HU (Quad core)	X	X	✓	X	X
	Dell 1HU	X	✓	○	○	○
	Lite RT (Quad Core)	X	✓	✓	○	○
	Advantec i7 (6th gen Quad core)	✓	✓	X	X	X
	Advantec i7 (3rd gen Quad core)	X	X	X	✓	X
	Advantec Core Duo (Dual Core)	X	X	X	X	✓
Legend						
Supported				✓		
Not Compatible				X		
Unsupported but should work				○		

AND
Discover Precision

Product Version	Year																
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
iTest 2.3	✓	✓	✓	○	○	○	○	○	X	X	X	X	X	X	X	X	X
iTest 3.0	-	-	✓	✓	○	○	○	○	X	X	X	X	X	X	X	X	X
iTest 3.1	-	-	-	✓	✓	✓	○	○	○	X	X	X	X	X	X	X	X
iTest 3.2	-	-	-	-	✓	✓	✓	○	○	○	X	X	X	X	X	X	X
iTest 3.4	-	-	-	-	-	-	✓	✓	○	○	○	X	X	X	X	X	X
iTest 3.5	-	-	-	-	-	-	-	✓	✓	○	○	○	X	X	X	X	X
iTest 3.6	-	-	-	-	-	-	-	-	✓	✓	○	○	○	X	X	X	X
iTest 3.7	-	-	-	-	-	-	-	-	-	✓	✓	○	○	○	X	X	X
iTest 3.8	-	-	-	-	-	-	-	-	-	-	✓	✓	○	○	○	X	X
iTest 3.9	-	-	-	-	-	-	-	-	-	-	-	✓	✓	○	○	○	X
iTest 4.0	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	○	○	○
iTest 4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	○	○
iTest 4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	○
iTest 4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓
iTest 4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓
Legend																	
Current Version										✓							
Bugfix Only										○							
Not Supported										X							
Not Available										-							