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## Customer Assistance Using a Template DataSet

#### Discussion

Radiant Technologies may sometimes provide a customer with a template DataSet that shows a particular use of Vision or helps the customer in the design of a Test Definition (experiment) that meets the customer's needs. Most often the DataSet will consist of a Current Test Definition (CTD) that serves as the template, with nothing saved to the DataSet Archive. It would be unusual for the user to be able to use the template without customizing it to his or her needs.

This document provides an example that guides the user through the process of registering the DataSet and then updating it to suit the needs. The example is for demonstration within this document. Any template provided to a customer will be tailored to meet the customer's particular needs as closely as possible.

#### **Example Template**

The example template consists of five Tasks.

1. Pause Task: This serves as a manual trigger Task. It simply presents a dialog that instructs the user to "Press <Enter> to Start".

Pause Task Configuration	×
	X
Pause Task Name (90 Characters Max.)	
Press <enter> to Start</enter>	
OK No Execute Cancel	
User Self-Prompt (60 Characters Max.)	
Press <enter> to Start</enter>	
Parameter to Append to Prompt	
<none>&gt;</none>	
Amp Voltage Gain	
Amp Voltage Offset	
Capacitor ID	
Dia Colume	
Comments (511 Characters Max.)	
Example customer template DataSet/Test Definition. Task 1: Pause to initiate the Test Definition	~
execution.	
	$\sim$
Click For	
Beep on Execute	
(Configure in Tools->Options)	
Summer and Summer Summer Summer Summer Summer	
Pause Version: 5.35.0 - Radiant Technologies, Inc., 1999 - 10/07/21	
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**Figure 1 – Task 1: Pause To Initiate Test Definition Execution.** 

2. Hysteresis Task: This is a 2.0-Volt/10.0 ms Hysteresis. It is configured to adjust the voltage by incrementing by 1.0 Volt in a Branch Loop.



Figure 2 – Task 2: Multi-Volt/10.0 ms Hysteresis. Adjust DRIVE Signal by +1.0 V in a Branch Loop. 3. Hysteresis Filter Task: The Task is configured to collect, center, plot and store the Hysteresis PV data. The Task is configured to append the data to a single plot in a Branch Loop.

Hysteresis Filter Setup	×
OK Cancel	
Main Setup Plot Setup	
Hysteresis Filter Task Name (90 Characters Max.)	
Center Multi-Volt/10.0 ms Hysteresis Data - Append in a Branch	Lo
No Execute	
From outside a loop, accumulate all data taken inside the loo	p
Filter	
Uncentered Polarization (µC/cm2)	Subsample
Centered Polarization (µC/cm2)	Smooth Data
Normalized Capacitance (µF/cm2) Vs Voltage	Cat United and Films V/DE Instat
Current Density (mA/cm2) (= dP/dt) Vs Voltage	Set Hysteresis Filter VDF Import
Normalized Capacitance (µF/cm2) Vs Polarization	Read Data From Vision File
Integrated Polarization X V(n)	
Integrated Polarization X dV	
Integrated Polarization X t(r)	Set Runtime Table Export
Charge (µC)	Runtime Text File Table
Centered Charge (µC)	
Instantaneous Current (mA)	
Task Selector	
Multi-Volt/10.0 ms Hysteresis - Task 2 in the Example Customer	Te Add Task
	I. Left Mouse Selects Single Items
	2. Left Mouse + Shift Key
	Selects Consecutive Items
	Selects Multiple Independent Items
Comments (511 Characters Max.)	
Example customer template DataSet/Test Definition. Task 3: Co ms Hysteresis. Append data to a single plot in a Branch Loop.	Illect, center, store and plot Multi-Volt/10.0 A
	~
Respond to	Nesting Branch 🗹 Click For Task
Be (Configure in	Tools->Options)
Hysteresis Filter Version: 5.35.0 - Radiant Technologies, Inc., 20	01 - 10/07/21
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Figure 3 – Task 3: Hysteresis Filter Task Main Configuration Dialog. Center the Polarization (μC/cm<sup>2</sup>) Vs Voltage.

Hysteresis Filter Setup	×
OK Cancel	
Main Setup Plot Setup	
✓ Plot These Data ✓ Append These Data to Previous Data Taken Inside a Loop Plot Title (90 Characters Max.)	
Center Multi-Volt/10.0 ms Hysteresis Data - Append in a Branch	Plot Option Volts
Plot Subtitle (90 Characters Max.)	Field (kV/cm) Time (ms) Volts Vs Time
Plot X Axis Label (90 Characters Max.)	
voitage	
Plot Y Axis Label (90 Characters Max.) Polarization (μC/cm2)	
Export Meta Data at Runtime Export JPEG at Runtime Export Bitmap at Runtime File Name	
	Click For Task Instructions

## Figure 4 – Task 3: Hysteresis Filter Task Plot Configuration Dialog. Append Data to a Single Plot in a Branch Loop.

4. Single-Point Filter Task: Collect, plot and store Hysteresis  $P_{Max}$  ( $\mu$ C/cm<sup>2</sup>) and  $\pm$ P<sub>r</sub> ( $\mu$ C/cm<sup>2</sup>) as a function of maximum DRIVE voltage as the voltage is adjusted in a Branch Loop.



Figure 5 – Task 4: Single-Point Filter Task Main Configuration Dialog. Plot Hysteresis P<sub>Max</sub> (μC/cm<sup>2</sup>) & ±P<sub>r</sub> (μC/cm<sup>2</sup>) Vs Voltage.



Figure 6 – Task 4: Single-Point Filter Task Plot Configuration Dialog.

5. Branch Task: Return execution to the Hysteresis Task until the "Hysteresis: Current Volts" User Variable value is greater than or equal to 10.0 Volts.

Branch Setup	×						
Branch Task Name (90 Characters Max.) Branch to Current Hysteresis Voltage >= 10.0 Volts	Branch On True Branch On False						
OK Parameter to Compare Cancel	<b>6 1 1</b>						
	Comparison Integer Text						
Amp Voltage Gain	0						
Amp Voltage Offset	NOT = Real						
Branch Task: Looped	Secolean						
Capacitor ID	> 10 true						
Die Column	+ Tolerance false						
Die Row	0						
DRIVE Voltage							
Hardware Present	Use Tolerance						
Hysteresis: A (Loon Area)							
Hysteresis: CMax-Eff	User Variable Limit Selection						
Hysteresis: Current DCBias	< <none>&gt;</none>						
Hysteresis: Current Electric Field (kV/cm)	Amp Voltage Gain						
Hysteresis: Current Field (kV/cm)	Amp Voltage Offset						
Hysteresis: Current Period	DRIVE Voltage						
Hysteresis: Current Volts	Hysteresis: A (Loop Area)						
nysteresis: Dielectric Constant							
if "Hysteresis: Current Volts Branch Point Task	s" < 10, then Branch						
Diet Husternic DMan (+O/em2) & (De (+O/em2)) Ve Velterer							
Center Multi-Volt/10.0 ms Hysteresis Data - Append in a Branch	Select Branch Target						
Multi-Volt/10.0 ms Hysteresis - Task 2 in the Example Customer	Branch Loop Limit						
Press <enter> to Start</enter>	150						
	150						
	"Branch Loop Limit" Iterations						
	Provided "Branch Loop Limit" > 0.						
	Set to '0' to Disable.						
Comments (511 Characters Max.)							
Example customer template DataSet/Test Definition. Task 5: Ret current Hysteresis voltage is greater than or equal to 10.0 Volts.	urn execution to the Hysteresis Task until the						
This Dialog is Resizeable and Scrollable							
Beep On Execute Task (Configure in Tools->Options)							
Branch Version: 5.35.0 - Radiant Technologies. Inc., 1999 - 10/07/21							
2, , , ,							
	<b>RADIANT</b>						
	TECHNOLOGIES, INC.						

**Figure 7 – Task 5: Branch Task Configuration Dialog.** 

This example Test Definition is stored as the Current Test Definition (CTD) to the "Customer Template DataSet Demonstration" DataSet. The CTD is also named "Customer Template DataSet Demonstration".



**Figure 8 – "Customer Template DataSet Demonstration" DataSet.** 

For the purposes of this demonstration, the DataSet file, Customer Template DataSet Demonstration.dst, associated with this DataSet would be attached to an email to the customer. If you are being provided these instructions in order to work with a template DataSet, your template will almost certainly have a different construction and name.

📕   🔄 🗖 🖵   Testing						- 🗆	×
File Home Share View							~ 🕐
Image: Pin to Quick access     Copy     Paste     Image: Copy path       Image: Pin to Quick access     Paste     Image: Pin to Quick access     Paste	Move Copy to Copy	Rename New folder	Properties	en 👻 📑 Select all t Select none tory 📑 Invert select	ion		
Clipboard	Organize	New	Open	Select			
← → ∽ ↑ 📙 ≪ Dat → Testing	✓ Č	arch Testing					
DataSets	^ N	ame	D	ate modified	Туре	Size	^
Annotations		🖥 customer template dataset demon	stration.dst 10	0/12/2021 2:07 PM	DST File	240 KE	в
Application Notes		🖥 test sync for admin info.dst	1(	)/11/2021 2:46 PM	DST File	240 KE	в
Auto_Log		test sync for admin info.txt	1(	0/11/2021 2:46 PM	Text Document	1 KE	в
Checklist		🖥 quiklook-to-dataset customer dem	onstration.dst 10	0/11/2021 12:01 PM	DST File	1,114 KE	в
CS 2.5 Calibration		quiklook-to-dataset customer dem	onstration.txt 10	0/11/2021 12:01 PM	Text Document	1 KE	в
Database Testing		🖥 test read sensor admin info.dst	10	0/11/2021 10:34 AM	DST File	240 KE	в
140 items 1 item selected 240 KB	¥	test read sensor admin info.txt	10	0/11/2021 10:34 AM	Text Document	1 KE	3 🗸 🗸

Figure 9 – The Template DataSet \*.dst File.

#### **Register the DataSet**

Registering the DataSet records it into the DataSet Explorer. From that window the DataSet can be opened and worked with. Copy the DataSet file (\*.dst) from the email to an appropriate location on the Vision host hard disk.

The simplest way to register the DataSet is to stop Vision if it is executing and then double-click the DataSet file. Vision will start and the DataSet will be registered and opened. This method will not work if your installed version of Vision is older than 5.34.0 and if there are any spaces in the file name or file path. This problem was resolved in version 5.34.0. (If you are running an older version then you should update your version bv going to https://www.ferrodevices.com/vision-data-management-software/download vision software/.)



# Figure 10 – Double-Click DataSet File to Register and Open in Vision.

If you are unable to register and open the DataSet by double-clicking, or if Vision is already running, you can register by selecting <u>Explorer->Register</u> DataSet... or by clicking the Reg DS ( $\bigcirc$ ) icon on the Vision toolbar. A standard Windows file browser dialog is used to navigate to

and select the DataSet file. When the dialog is closed the DataSet appears in the DataSet Explorer tree. Double-clicking will open the DataSet.



**Figure 11 – Register the DataSet from the Vision Program.** 

#### **Edit the Template Test Definition to Suit**

The template DataSet that has been provided will resemble the customer's needs but will almost certainly need to be adjusted by the customer to be accurate. This section discusses how the Test Definition found in the template DataSet Current Test Definition (CTD) is to be edited for use.

To edit the Tasks in the template DataSet:

- 1. Open the DataSet if it is close.
- 2. Right-click in the EDITOR window and select <u>C</u>lear All, or press <Ctrl-A>. All Tasks in the EDITOR Test Definition will be cleared from the Window.



## Figure 12 – Clear All Tasks from the EDITOR Window.

3. Right-click on the CTD name. Select <u>C</u>urrent Test Definition to Editor. The Tasks in the template CTD will be copied into the EDITOR window.



# Figure 13 – CTD Tasks Copied to EDITOR.

4. Double-click a Task in the EDITOR window to open its configuration dialog for adjustment.

EDITOR Press <enter> to Start Mi Vi-Volt/10.0 ms Hysteresis - Task 2 Center Multi Volt/10.0 ms Hysteresis E Plot Hysteresis PMax (µC/cm2) &amp; ±Pr Branch to Current Hysteresis Voltage : Double-Click</enter>	in the Example Custome lata - Append in a Branci μC/cm2) Vs Voltage = 10.0 Volts	r Tem h L			
Hysteresis Setup Hysteresis Task Name (90 Chars Max.) sis - Task 2 in the Example Customer Template	DRIVE Signal Parameters DRIVE Profile Type	Max Voltage Hyst. I	DC Bias (V) Period (ms)	Sample Parameters	×
OK Cancel/Plot	Standard Bipolar From File Standard Monopolar Sine Double Bipolar Monopolar Sine Double Bipolar	mplifier 2 0 plifier Max Field (kV/cm) al 66.67 Previe	10 Frequency (Hz) 1.00e+02	Sample Area (cm2) 0.0001 Sample Thickness (µm) 0.3	
Center Data Bafore PMax, ±Pr and ±Vc Calculation Smooth Data Before PMax, ±Pr and ±Vc Set Sample Info Adjust Parameters in a Branch Loop	Deoble Spolar Sine + 1 I O Percent Polse All Zerces Deoble Monopolar Deoble Monopolar Deoble Monopolar Sine	cify Profile Max. Voltage cify Profile Max. Field (kV/cm)		Amplification and Unmeasured Sig Manual Preset Loop Pre-Loop Delay (ms) 1000	EETURN Signal Amplification Level 20.0 1.82 0.019 0.0019 0.00019 HVI - 0.000019
Set SENSOR 2 SENSOR 2 Enabled Set Hysteresis VDF Import This Dialog in Read Data From Vision File (VDF/*.vis)	Resizeable and Scrollable	ternal Reference Elements Enable Reference Capacitor I. 0.n f (Max = 30 Volts) Enable Reference Resistor 2.5 M-Ohm ±0.1% (Max = 100 Volts)	Enable Reference Ferroelectric (Max = 12.0 Volts) FE Cap State Cap A Enable	Start with Last Amp Value 🗹 Auto Amplification 🗹	~
Set Runtime Export           Runtime Text File Table			Cap B Enable		
Comments (511 Characters Max.) Example customer template DataSet/Test Definition of a Branch Loop.	. Task 2: Measure sample Hysteresis (İ	PV) response at 10.0 ms and an initial DRI	IVE signal strength of 2.0 Volts. Incre	ment the DRIVE signal strength by 1.	0 Volt at each iteration
Hysteresis Version: 5.35.0 - Radiant Technologies, Inc	., 1999 - 10/07/21		1	Respond to Nesting Branch Reset Beep on Execute (Configure in Tools-Options)	Click For Task Instructions

# Figure 14 – Open a Task for Editing.

5. Make all adjustments and then click *OK* to close the configuration dialog and update the Task in the EDITOR window. Pay particular attention to *Sample Area (cm2)*, *Sample Thickness (\mu C)* and *Task Name* where appropriate.



Figure 15 – Edit the Task.

6. When the update is complete for all pertinent Tasks, and all configuration dialogs are closed, right-click in the EDITOR and select <u>Test</u> Definition to Current DataSet. Assign an appropriate unique and meaningful name to the CTD. The CTD will be updated. Your experiment is now ready to execute. Another option is to create your own DataSet and move the Test Definition into it for execution.



# Figure 16 – Move the Updated CTD Back to the Template DataSet.

I hope that this discussion is helpful to you. Please let me know immediately if you have questions, comments or difficulties.

Good luck in your research.

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