CRYSTAL XE

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Conditional recipes

(Available since Crystal XE version 1.06)

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Date (jj/mm/yyyy)	Rev	Description
20/10/2017	1	Creation

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1 PREFACE

1.1 Audience

The Riber Crystal XE software is a very versatile and expandable environment for the control of MBE, CBE and similar growth systems but not only.

1.2 Documentation accessibility

This document and its latest version can be downloaded on the Crystal XE website at : <u>http://www.crystalxe.com</u> in the section My CrystalXE

You will need to create an account to access to My CrystalXE. A guide on how to do this is included on the Riber web site, and you will be requested to provide basic details. This account will be then activated by the Riber team. Once this administrative process has been completed, you will be able to access the relevant information, as shown in the figure below. Registering will also provide you with the option of being kept informed of developments and upgrades to the software, and to other Riber systems.



Figure 1: Access to the manual on the Riber Crystal XE website

1.3 Related documents

For more information, see the Crystal XE user manual which can be also downloaded at <u>www.crystalxe.com</u> in the section My CrystalXE.



Figure 2: Crystal XE User Manual



2 Introduction

This release is intended for users who wish to write their own recipes by using the integrated recipe editor. The integrated recipe editor allows writing recipes without any knowledge in software programming.

The other solution is to use the Pascal scripts that offer all the possibilities of an advanced programming language.

Since **Crystal XE version 1.06**, it is possible to create conditional recipes.

In other words, it is possible to add a condition to execute or not execute a step. This condition can also be set to **wait for** an event.

The condition can be applied on

- A layer
- A loop
- A pause
- A sub-recipe

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3 How to enter a conditional event

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END LOOP		-										
J9 00:01:09.000	Last layer in progress	55			CLOSE							
											Ok Com	

A conditional step (layer, loop, pause or sub-recipe) is identified by a yellow mark.

In the tree view, there is a yellow icon, in the grid with the first cell of the line is yellow and in the map view, a vertical yellow margin indicates that the step is a conditional layer.

To define a new condition, click on a step and then select "Conditional item" in the combo box - see the red rectangle in the next picture:

XII Main recipe editor [test.rcp]	
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[+] Expand all [-] Collapse all Properties Generated script Chart	s
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E-4 Mg_VCOR300_P2	
- ten Shutter.Control = CLOSE Conditionnal item	
Tizi Cracker Tip Z2.RegMode = Auto	
Reservoir Evaporator Z1. RegMode = Auto	
O2:00:00:02:00- Second layer (conditionnal: confirmation)- La	
Comment Initialization	

When the conditional item is selected, the following options are available:

Propertie	Generated script Charts	
Condi	itional item	
2 Enter of	ondition bellow (Ex: App.Var.MyVar<200)	
•		
		_

You can select either "Process if condition is true" or "Wait until condition is true"

Pr	roperties	Generated so	ipt Charts	
?	Condition	<mark>mal item</mark> dition bellow (E	Process if condition Process if condition Process if condition Wait until condition	on is true

In the condition editor, you can enter any formula or condition that returns zero or a value other than zero. The condition will be **false** if the condition returns **zero**, otherwise the condition will be **true**.

The following conditions are available:

 A simple comparison using standard comparison instructions used in Pascal (see pascal language in the user manual), example: "GrowthPressure.pressure.MV<1E07" (The sign "<>" can be used to test if the values are different.)

To insert a tag, right click in the condition area and select "Insert from data explorer"

rialit recipe editor [tescrep]	
File Edit View	
] 🧉 🖬 🗎 🕂 🗑 백 時	
[+] Expand all [-] Collapse all	Properties Generated script Charts
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+	Enter condition bellow (Ex: App.Var.MyVar<200)
04:00:00:42.000- Layer 4, no condition- Layer duration= 5 s	Insert from data explorer
-C > Do 2- Loop here only if user reply YES- Duration = 22 s	
09:00:01:09.000- Last layer in progress- Layer duration = 5 s	

Select the tag in the data explorer

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Press OK to insert the selected tag into the condition area.

Then, enter a condition

Main recipe editor [test.rcp]	
File Edit View	
[+] Expand all [-] Colapse all	Properties Generated script Charts Conditional Item Process if condition is true Enter condition bellow (Ex: App.Var.MyVar<200) GrowthPressure.pressure.MV<1E07

- You can use the result of a script function like "QueryYesNo('message')"
- The result of a user defined function. In that case you must select the script file to use. Click in the main item of the tree view and select the file names used in the group "Script libraries" (see the screen copy bellow)

XI Main recipe editor [test.rcp]	
File Edit View	
[+] Evnand all [-] Collanse all ★ Main [test.rcp] Duration= 1 m 14 s [-] ↓ ↓ 010000000000- Initialization-Layer duration= 25 General ↓ ↓ 02000:0012.000- Second layer (conditional: confirmation)-Layer Itile ↓ ↓ 02000:0012.000- Initialization-Layer duration= 25 Title ↓ ↓ 02000:0012.000- Layer 4, no condition-Layer duration= 25 Author ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	error)

Then you can use all the functions that you have defined in the library.



4 Execute a condition recipe

When a condition is true, no change will be displayed in the recipe log.

When a condition is false, the following message will be displayed in the recipe log: "Condition is false, step skipped (followed by the comment of the item)"

Example of recipe log:

1	Layer	Date / Time	Description
	0001	20/10/2017 11:30:36,491	Initialization
	00021	20/10/2017 11:30:51,687	Second layer (conditionnal: confirmation)
	I	20/10/2017 11:31:01,687	Condition is false, step skipped (Third layer (conditional al temp>700))
	00031	20/10/2017 11:31:01,687	Layer 4, no condition
	I	20/10/2017 11:31:10,394	Condition is false, loop skipped Loop here only if user reply YES
	00041	20/10/2017 11:31:10,396	Last layer in progress
		20/10/2017 11-31-16 254	> Completed