

CFC Basics

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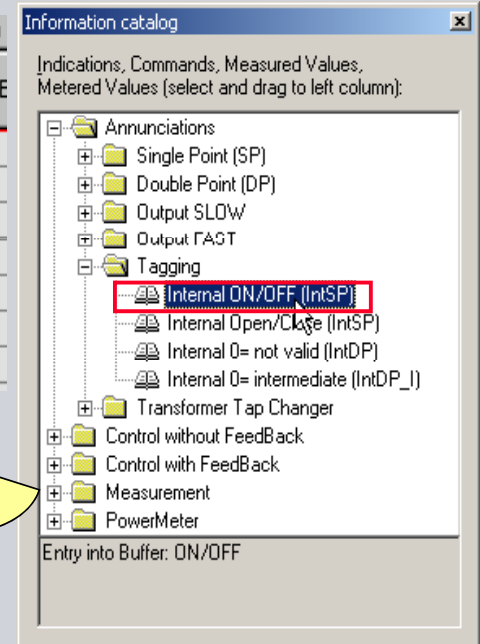
Follow the CFC standard procedure!

1. Allocate necessary information to CFC
2. Save the Configuration Matrix
3. Insert and name a new CFC chart
4. Draw the chart
5. Shift the chart in the proper priority class
6. Let the system verify the run sequence
7. Compile the chart
8. Save and download the parameter set

Step 1: Allocation of information

- Insert a new information item of the type “Internal Single-Point Indication” (Tagging) in the matrix and assign it to the F1 function key and to CFC (destination CFC).

	Information			Source			Destination						
	No.	Display text:	L	Type	BI	F	C	BO	LE	Buf	S	C	E
Change Group	00007	>Set Group Bit0		SP			X				X		
	00008	>Set Group Bit1		SP							X		
		Group A		IntSP							X		
		Group B		IntSP							X		
		Group C		IntSP							X		
		Group D		IntSP							X		
		Start		IntSP		1						X	



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Follow the CFC standard procedure!

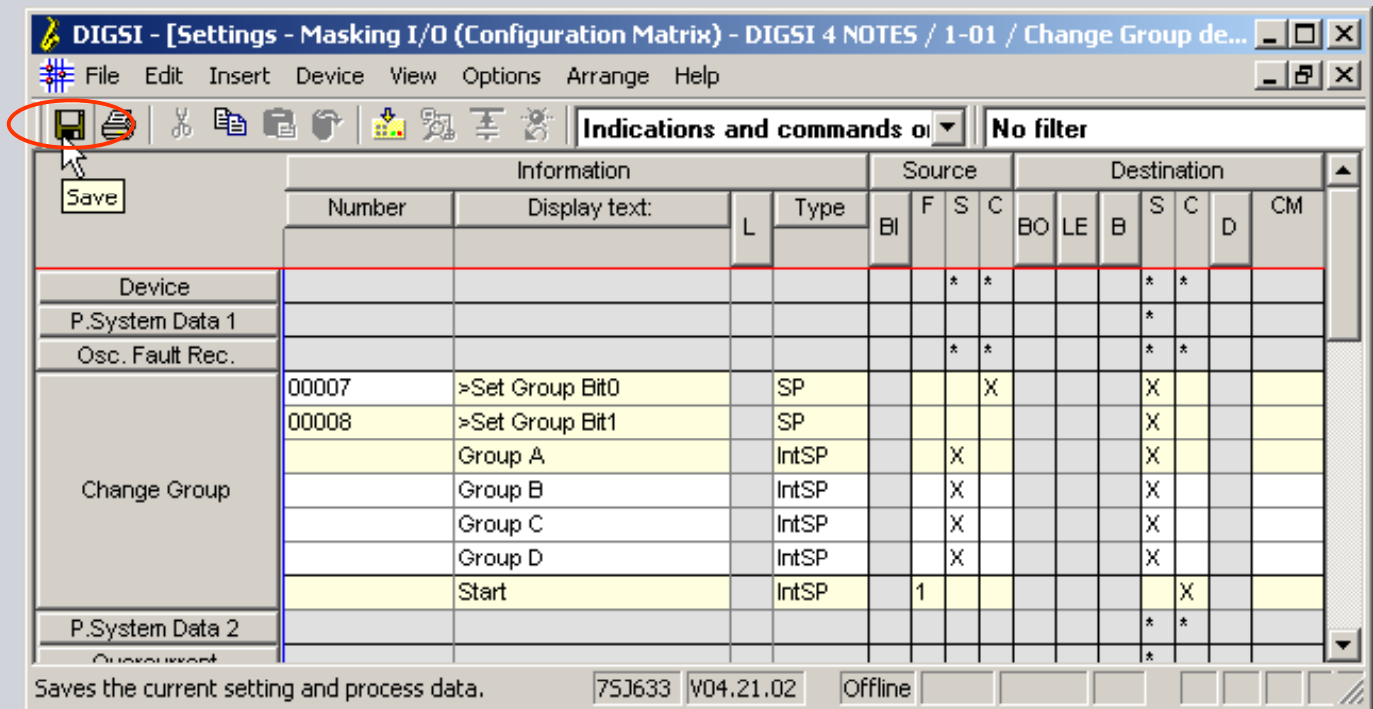
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Step 2: Save the allocated information



The screenshot shows the DIGSI software interface. The title bar reads "DIGSI - [Settings - Masking I/O (Configuration Matrix) - DIGSI 4 NOTES / 1-01 / Change Group de...". The menu bar includes File, Edit, Insert, Device, View, Options, Arrange, and Help. The toolbar contains various icons, with the "Save" icon (a floppy disk) circled in red. Below the toolbar, a "Save" button is visible. The main area displays a configuration matrix table with the following structure:

	Information			Source				Destination							
	Number	Display text:	L	Type	BI	F	S	C	BO	LE	B	S	C	D	CM
Device						*	*				*	*			
P.System Data 1											*	*			
Osc. Fault Rec.						*	*				*	*			
Change Group	00007	>Set Group Bit0		SP				X			X				
	00008	>Set Group Bit1		SP							X				
		Group A		IntSP			X				X				
		Group B		IntSP			X				X				
		Group C		IntSP			X				X				
		Group D		IntSP			X				X				
	Start		IntSP		1						X				
P.System Data 2											*	*			
Overcurrent											*	*			

At the bottom of the window, there is a status bar with the text "Saves the current setting and process data." and several fields: "75J633", "V04.21.02", "Offline", and several empty checkboxes.

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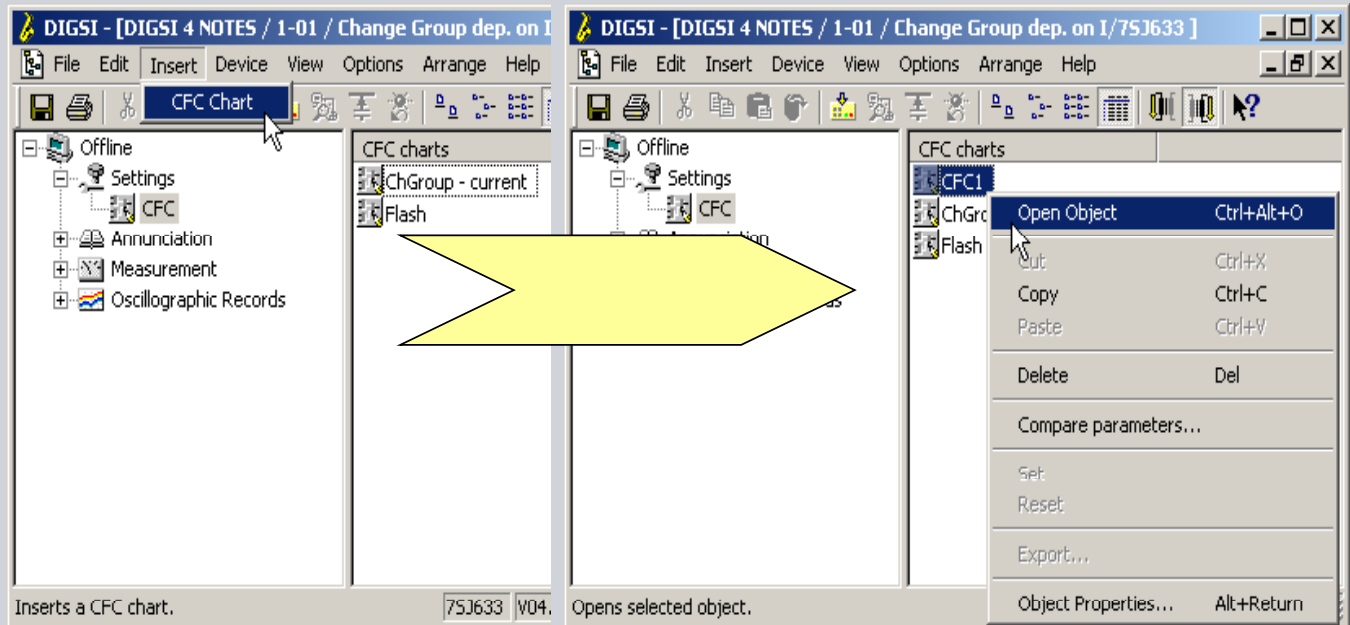
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Step 3: Insert a new CFC chart

→ Open the folder named “CFC”, insert a new CFC chart, give it a “good” name and open it.



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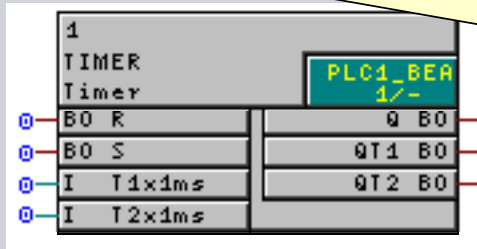
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Step 4: Draw a CFC chart

→ Use the TIMER block.

The TIMER runs only in PLC or PLC1 !

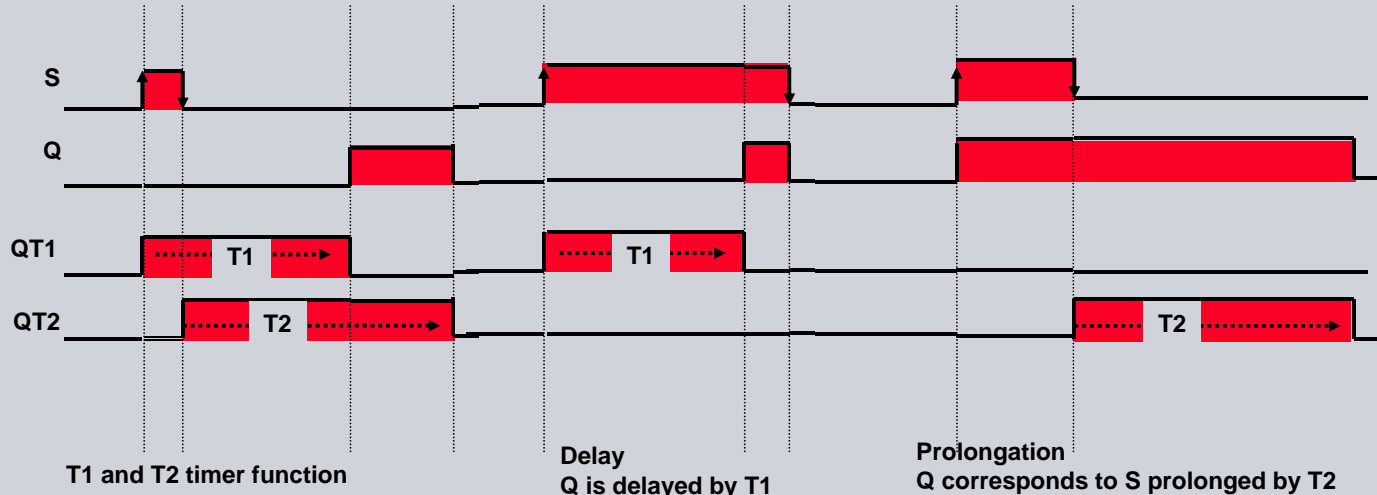
R => Timer Reset
S => Timer Start



$$Q = (S + T2) * \overline{T1} * \overline{R}$$

$$QT1 = T1 * \overline{R}$$

$$QT2 = T2 * \overline{R}$$



T1 and T2 timer function

Delay
Q is delayed by T1

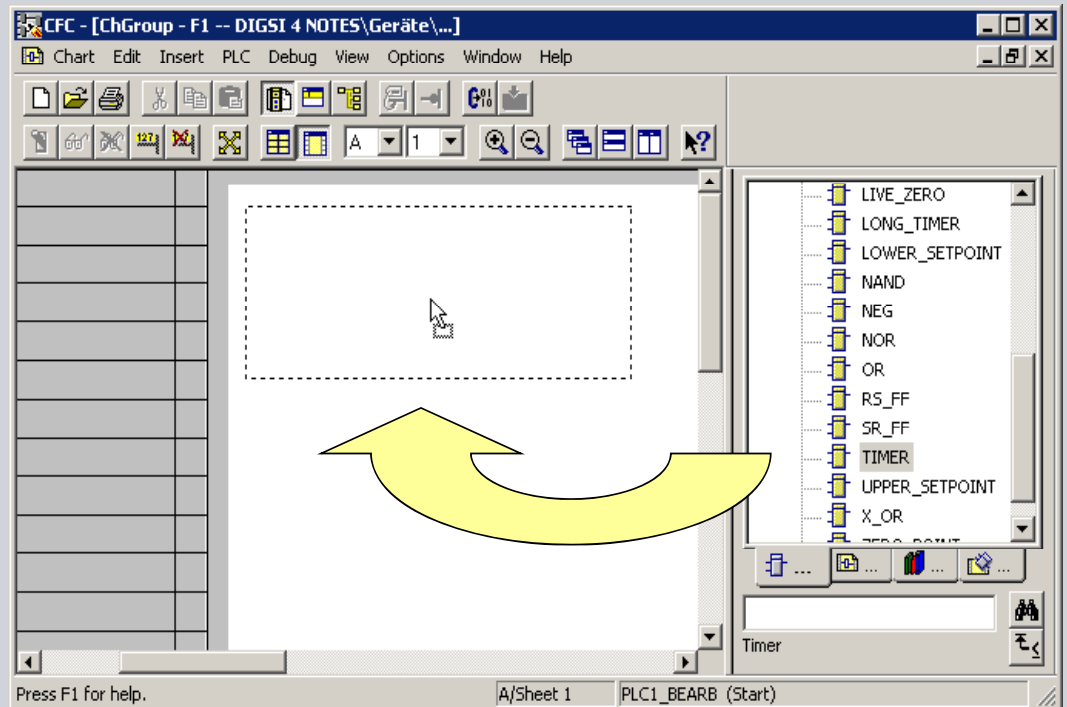
Prolongation
Q corresponds to S prolonged by T2

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Step 4: Draw a CFC chart

→ Insert a TIMER block via
Drag & Drop.

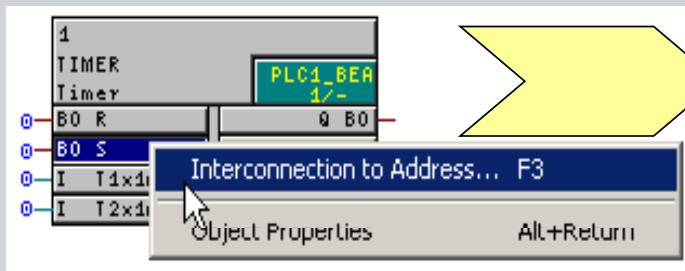


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Step 4: Draw a CFC chart

- Connect the input "S" (Start TIMER) to the information "Start" (configured to F1)



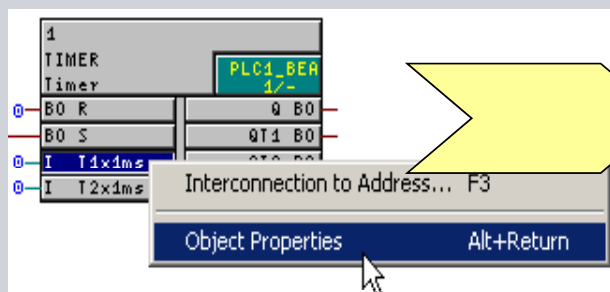
Select left border

Group	Display Text	Type
Device	>DataStop	SP
Disc. Fault Rec.	>Trig.Wave.Cap.	SP
Change Group	Start	IntSP
P.System Data 2	>May TRIP	OUT
Process Data	>CB ready	SP
Process Data	>DoorClose	SP
Process Data	>Door open	SP
Process Data	>CB wait	SP

Buttons: OK, Cancel, Help

Step 4: Draw a CFC chart

- Set the value for the timer "T1" to 10000 ms.



Properties - Input/Output

Block: TIMER.1
I/O: T1x1ms - IN(INT)

Value:

Inverted
 Invisible
 Watched

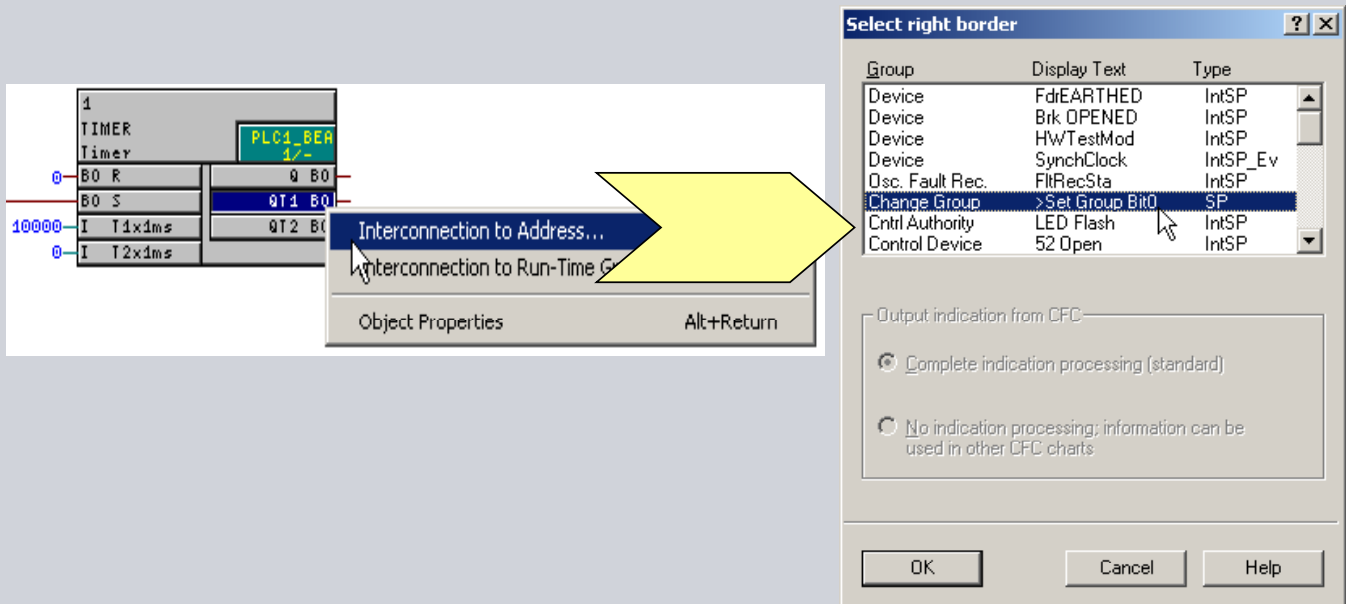
Comment: Value for t1 in msec.

Import/Export Assistant
 IEA parameter
 IEA interconnection

Buttons: OK, Cancel, Help

Step 4: Draw a CFC chart

- Connect the output “QT1” (HIGH applies for as long as the T1 timer is running) to the information “>Set Group Bit 0”



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4 priority classes for various tasks

PLC (Fast PLC)

- Blocking protection functions
- Few modules only
- Automatic start after change-of-state at the input

PLC1 (Slow PLC)

- Most frequent priority class (e.g. for TIMER applications)
- Automatic start after change-of-state at the input

SFS (Switchgear interlocking)

- Verifying the switchgear interlocking
- Automatic start like PLC plus when activating a control command

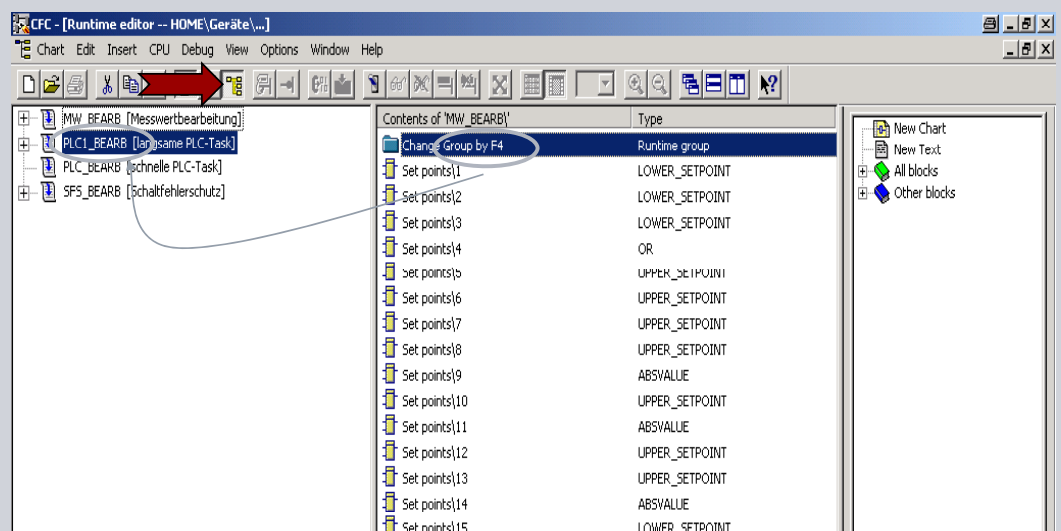
MW (Measured value processing)

- Configuring and comparing measured values
- Implementing additional protection functions such as “Reverse power (ANSI 32)” and “Power factor (ANSI 55)”
- Automatic start every 600 ms

Step 5: Shift chart in the proper priority class

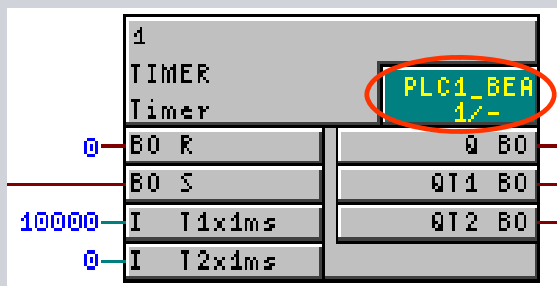
- ➔ Open the Runtime Editor
- ➔ To change the priority class: Grab your “good name” folder (by left mouse key) “ and drag & drop it into the desired priority-class folder menu (Shift + F11).

- ➔ If you want to prepare the NEXT CFC chart inserted to run under another priority class then first select the desired priority class then click on “edit” then “predecessor for insert position” and then “ok”



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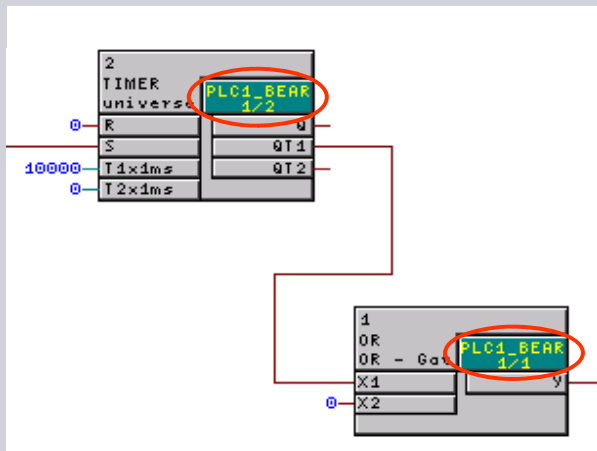
Step 6: Let the system verify the run sequence



Obviously, you don't have to change the run sequence as the TIMER is the only block running in the chart.

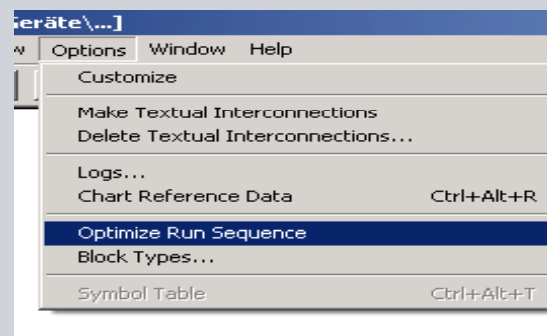
→ Changes must, however, be made if several function blocks are placed – and some of them are maybe in the wrong order...

Step 6: Let the system verify the run sequence



In this case, the run sequence must be changed as the TIMER has the number 2 in the chart, i.e. it will be executed after the OR block.

→ Click on “Options” and then on “optimize run sequence”.

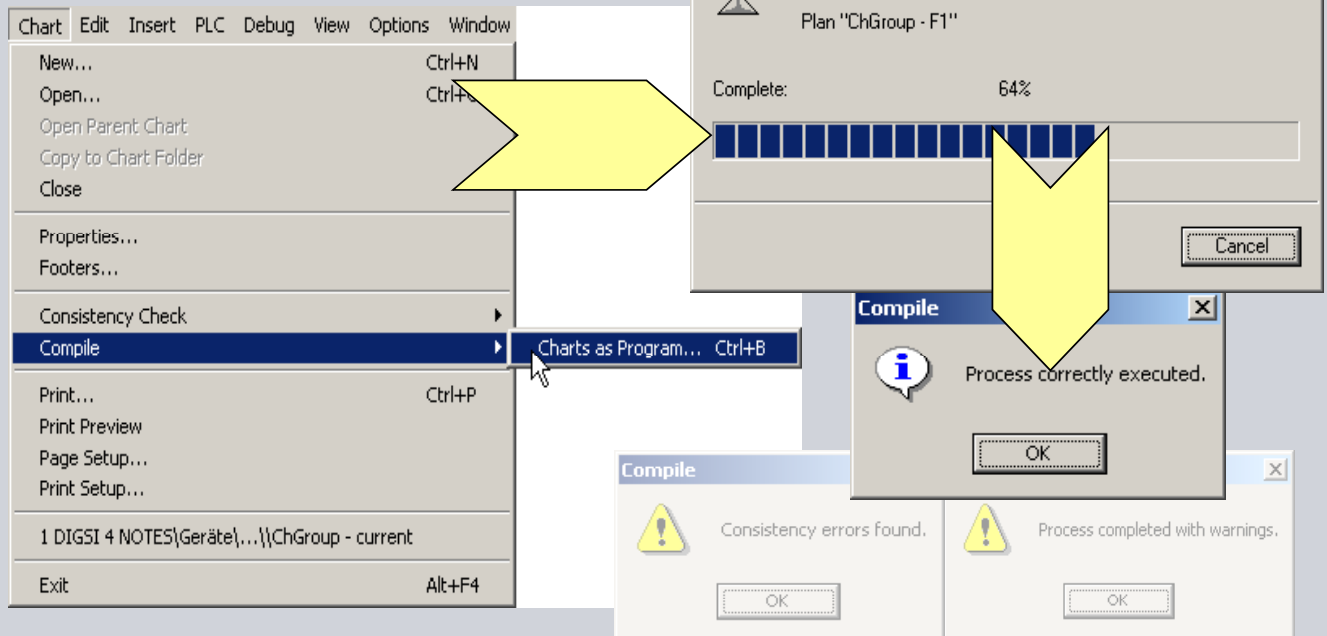


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7. **Compile the chart**
8. Save and download the parameter set

Step 7: Compile the CFC chart

→ Compile the chart.



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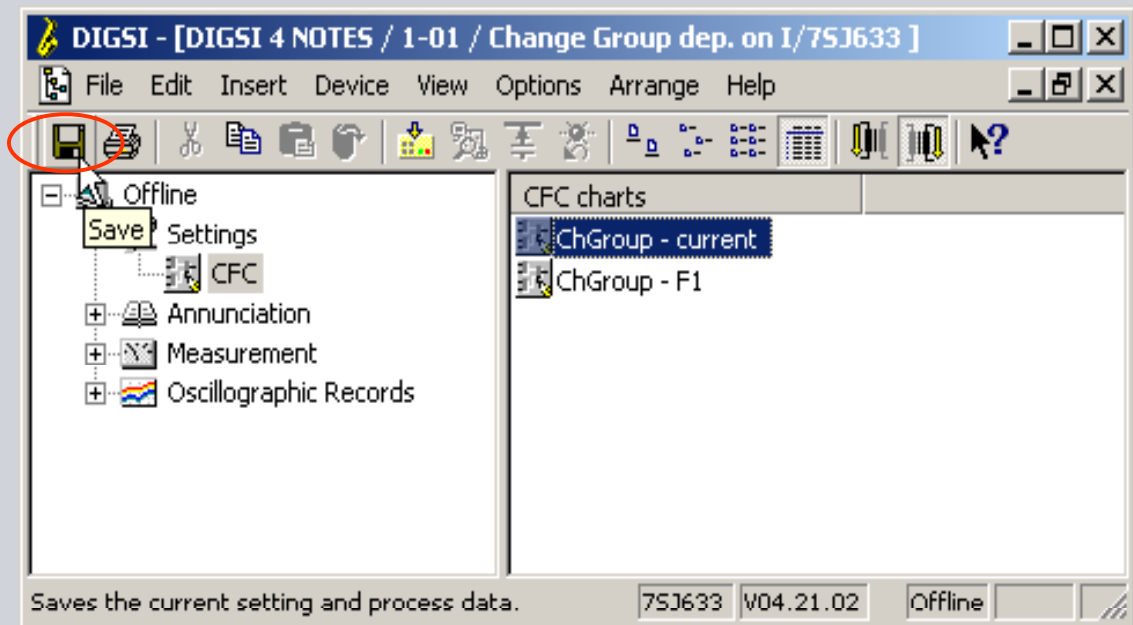
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Step 8: Save the parameter set

→ Close the chart and save the parameter set.



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