

Step by Step Guide to performing logic online changes in the Kingfisher CP-30 and G-30 RTUs

Introduction

The aim of this document is to describe the ISaGRAF online logic change process as supported in the Kingfisher PLUS+ and G30 based RTUs. The intended audience for this document are Engineers, Field Service Personnel, Technicians and System Integrators.

The author has assumed that the people using this document have a good understanding of Kingfisher RTUs, Toolbox PLUS+ and ISaGRAF.

Requirements

- Toolbox PLUS+ version 3.8.9 or higher
- CP-30/G-30 firmware version 2676 or higher
- Ethernet cross-over cable
- Kingfisher PLUS+ (PS-12, CP-30, BA-40) or G30 RTU (powered)
- USB License key (for ISaGRAF)
- PC with XP or Windows 7 Operating System

First Steps...

Ensure Toolbox PLUS+ software is installed and functioning correctly. Open Toolbox PLUS+ and create the required project – refer to the Toolbox PLUS+ manual for additional information.

The screen dump below shows an example project created to help write this document.

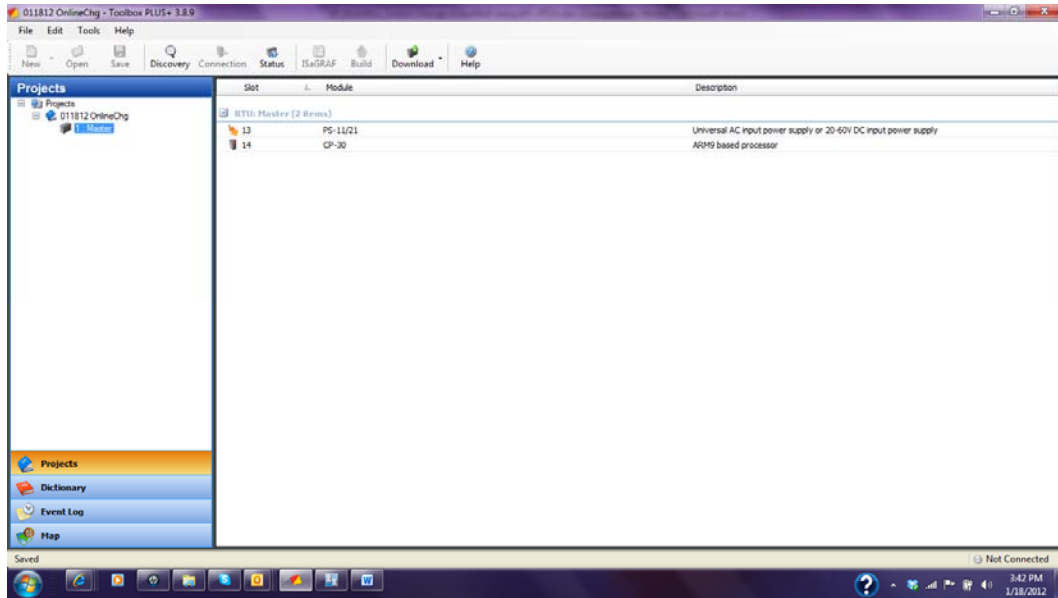


Figure 1: Example project created using Toolbox PLUS+ version 3.8.9

To launch ISaGRAF, either click on the ISaGRAF icon in the smart buttons row or right-click on the RTU name and select properties. A window will appear. Go to the “Programs” tab. Select the program and click on the Edit button as shown below (Figure 2)

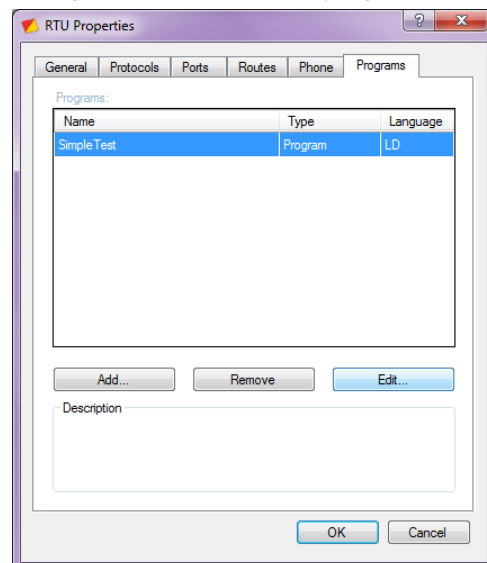


Figure 2: Accessing ISaGRAF by going to RTU properties from Toolbox PLUS+

ISaGRAF will open two windows – the ISaGRAF project window and the actual logic editor window. See figures three and four below.

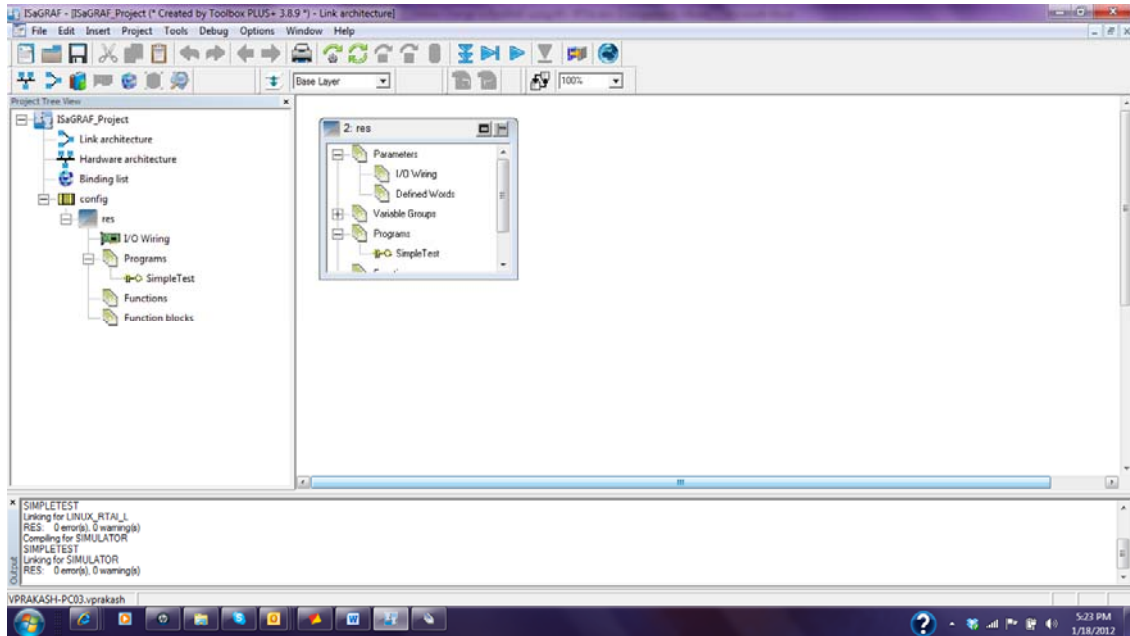


Figure 3: ISaGRAF project window

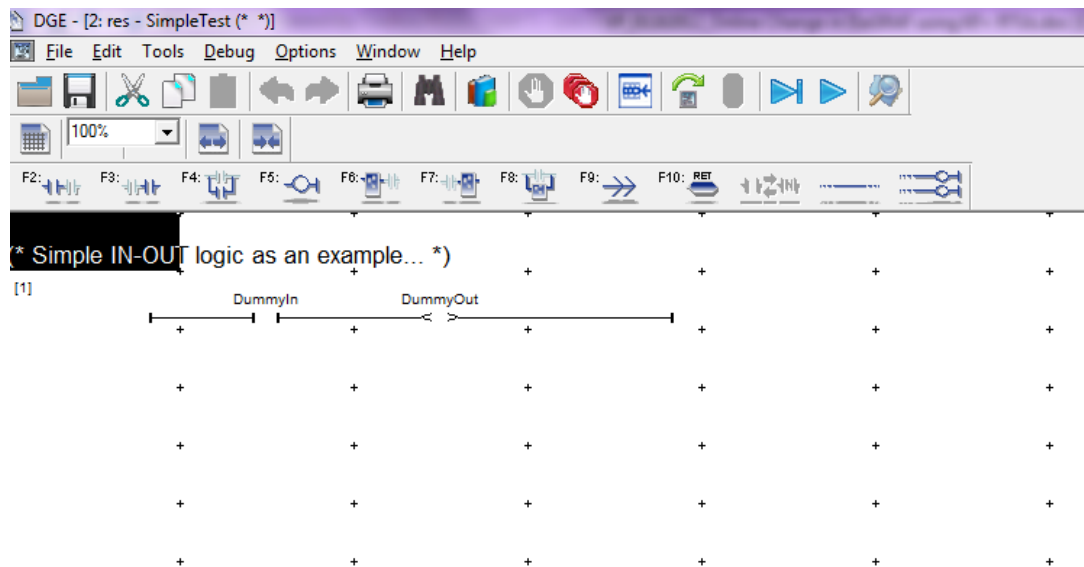


Figure 4: ISaGRAF logic edit window when using ladder logic. This window will look different and will depend on the chosen programming language – Ladder Logic, Structured Test, Function Block Diagram, Instruction List, Flow Chart and Sequential Function Chart

Review the ISaGRAF online help for additional information on the limitations of the online change function.

The example below will show the creation of variables, of different types, editing an existing line of logic and adding a new line of logic.

For additional information on how to add variables via the ISaGRAF dictionary, refer to the online help.

- In the ISaGRAF logic window as shown in Figure 4 (above), ensure cursor is on “DummyOut” coil.
- Press F2 to insert a contact to the left of “DummyOut”. A window will pop up as shown below.

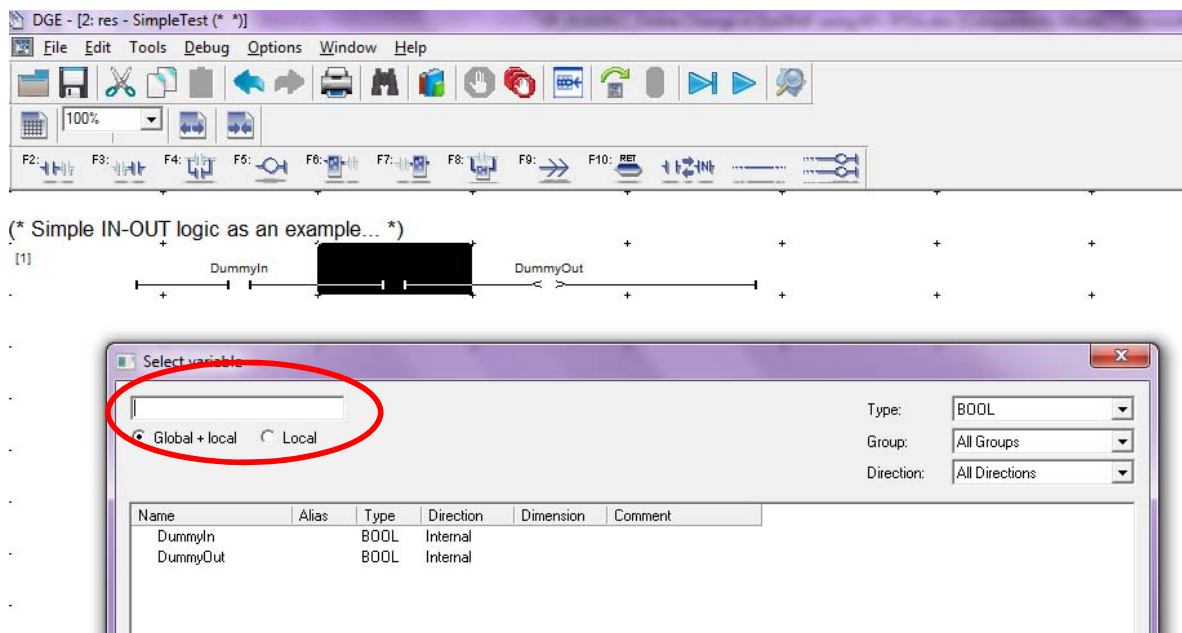


Figure 5: Inserting a new contact and a variable to an existing line of logic

- Type the Variable name in the field just above the “Global + Local” type – see figure 5, above.
- This example uses the variable name “NewCondition”. The new variable window will pop up – follow instructions and then select the newly created variable for the contact as shown in Figure 6 (below)

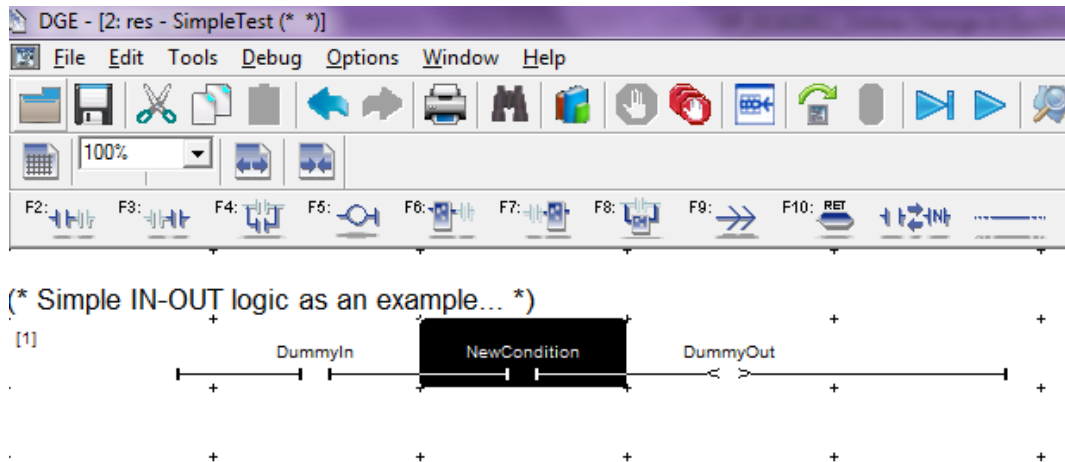


Figure 6: Logic line after a new condition (in this case a normally OPEN contact) has been added

- Click on File → Save to save the logic change
- Move cursor down to add a second line of logic. This new line will consist of a normally open contact and a comparison condition, which when true will SET the output coil.
- Follow the steps as listed above to add the new variables and logic. See figure 7 and 8, shown below.

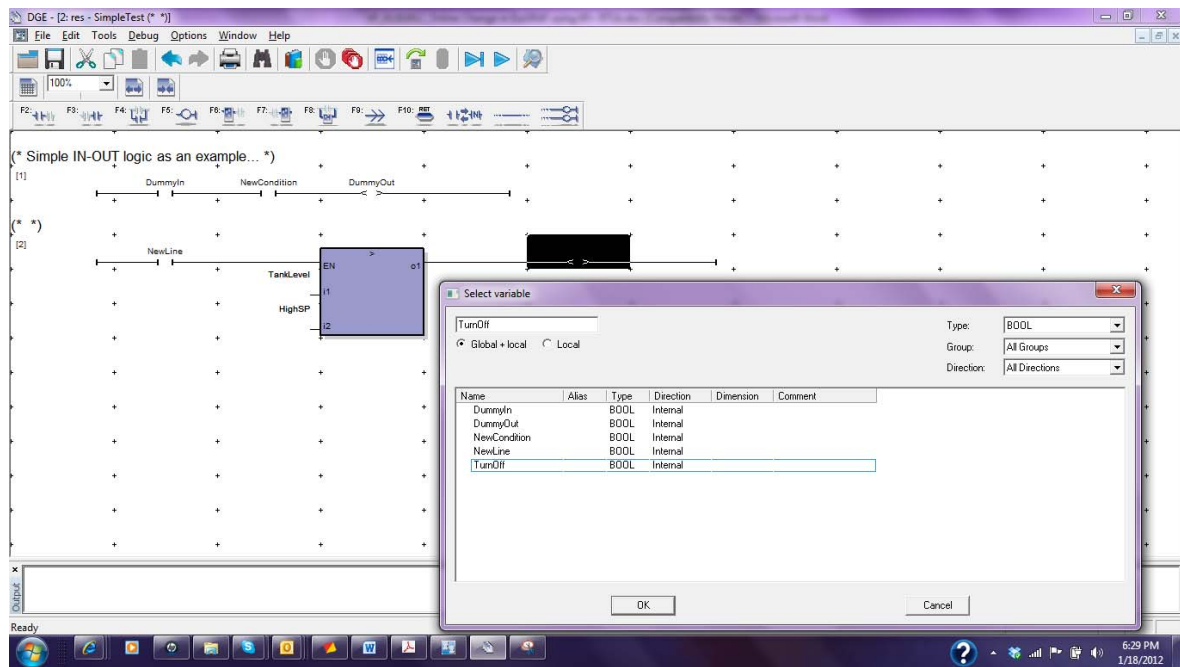


Figure 7: Adding a second line of logic – with new variables

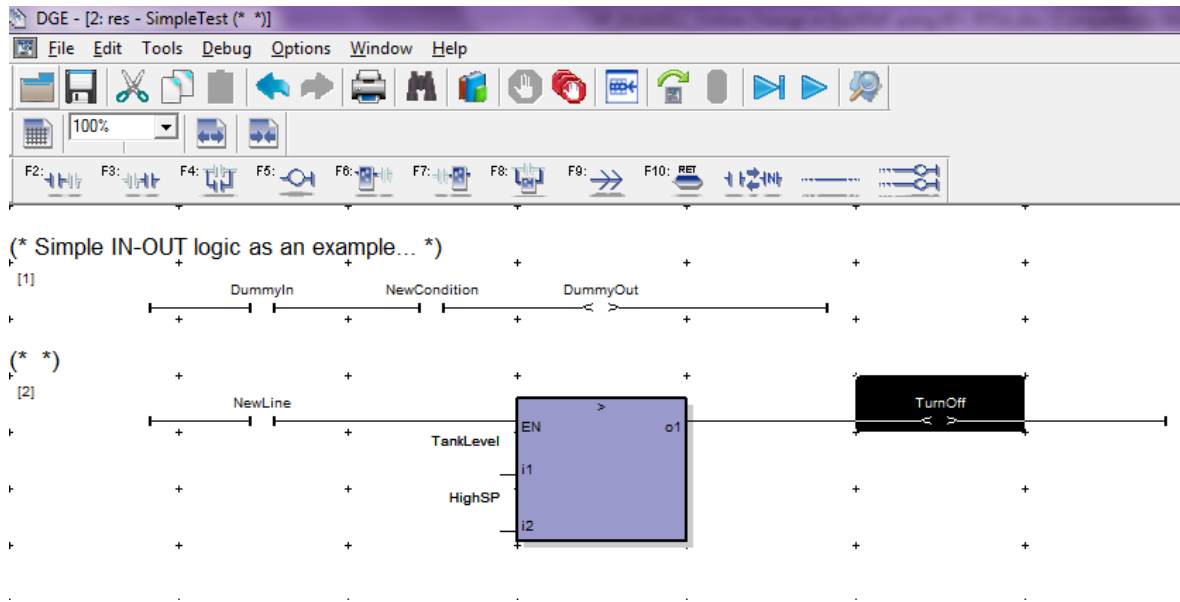


Figure 8: Logic window after second line has been added

- Click on **File** → **Save** to save the logic changes.
- Now, close this logic edit window and go to the ISaGRAF project window (shown in Figure 3)
- In this window, click on **Debug** → **On line change: Download**, as shown in Figure 9 below

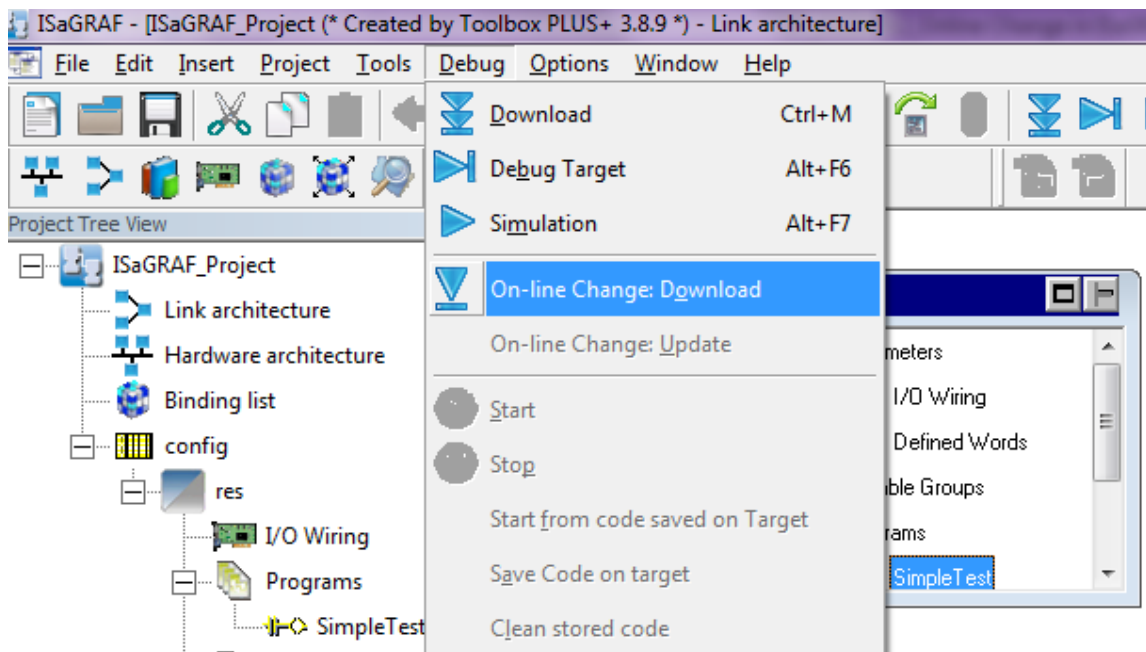


Figure 9: Online change menu selection from the ISaGRAF project window

- The following window (Figure 10) will pop up – select YES

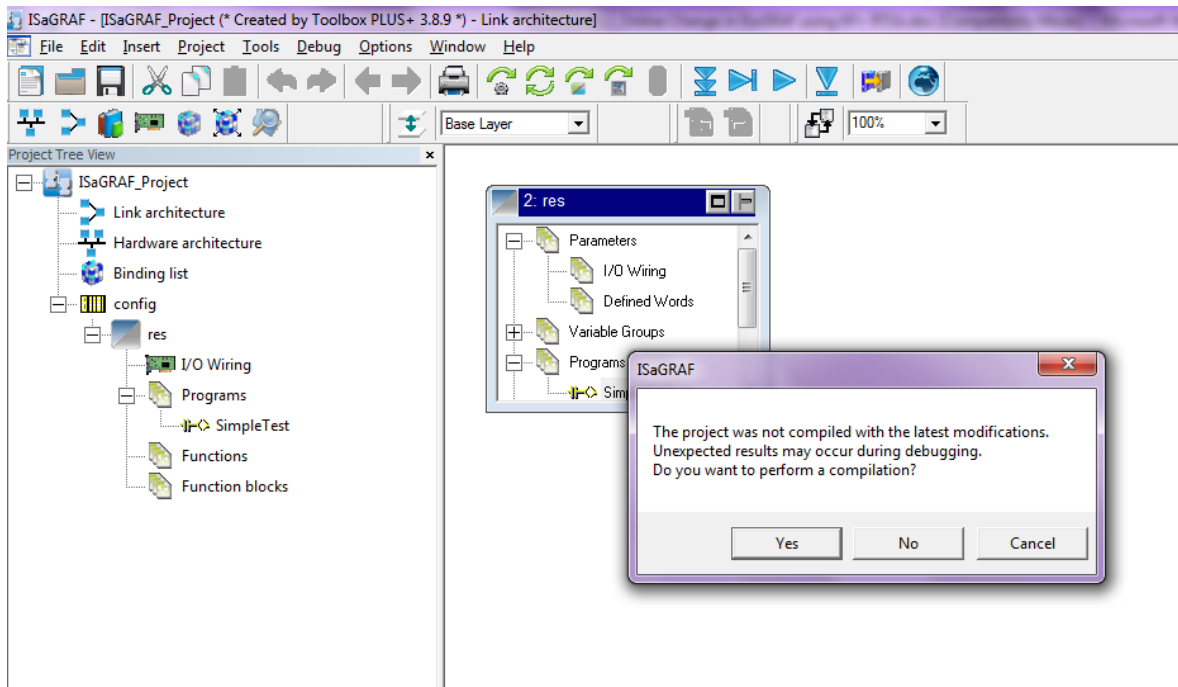


Figure 10: Online change, download process

- The logic will get compiled – if there are any errors, it will show on the “Output” window as shown below. If any errors, fix and repeat the steps listed above.

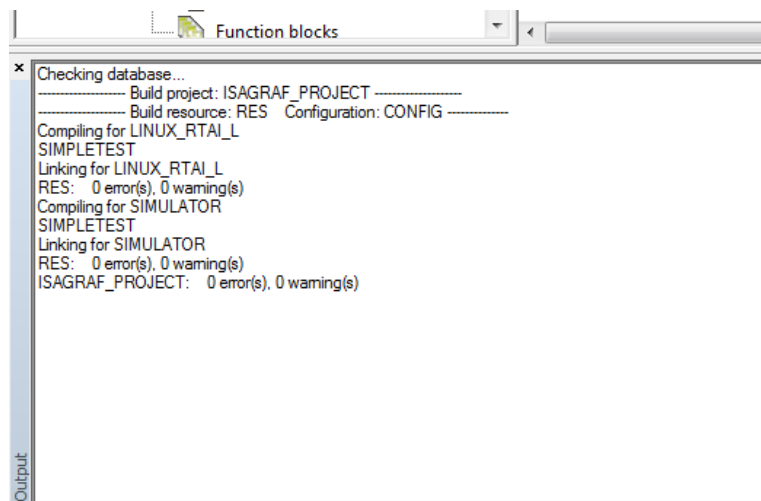


Figure 11: Results of a successful project compilation

- Now, click on **Debug → On line change: Download**, again. The window as shown in Figure 12 will show up. Ensure **“Update and Save on target after download”** is selected and then click on the **“Download”**

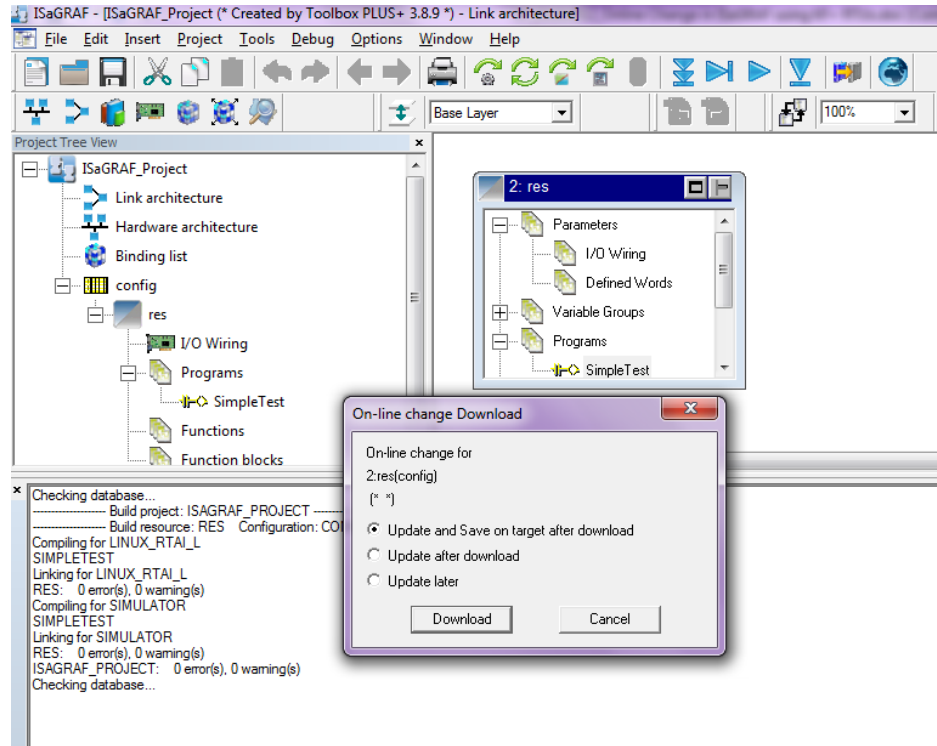


Figure 12: Download the online change...

- During the download process, the following window will appear

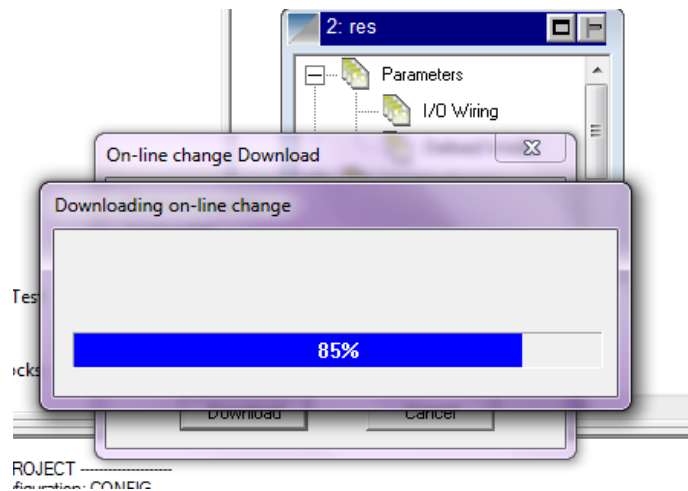


Figure 13: Screen dump showing the progress during the online change download process

- Once the download process is complete, observe the “Output” window to see if the download was successful – see Figure 14 below.

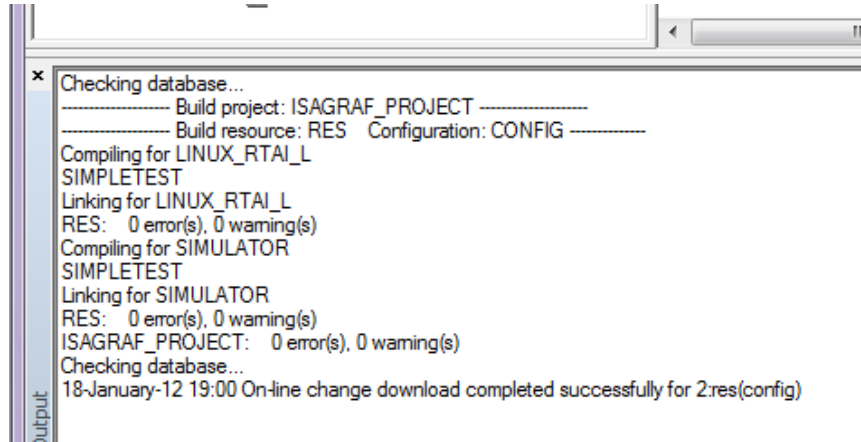


Figure 14: Output window after the download online change has been completed

To verify that the download change was successful and has taken effect in the RTU, go to the ISaGRAF logic editor window and select debug target (RTU) to ensure the logic change is working.

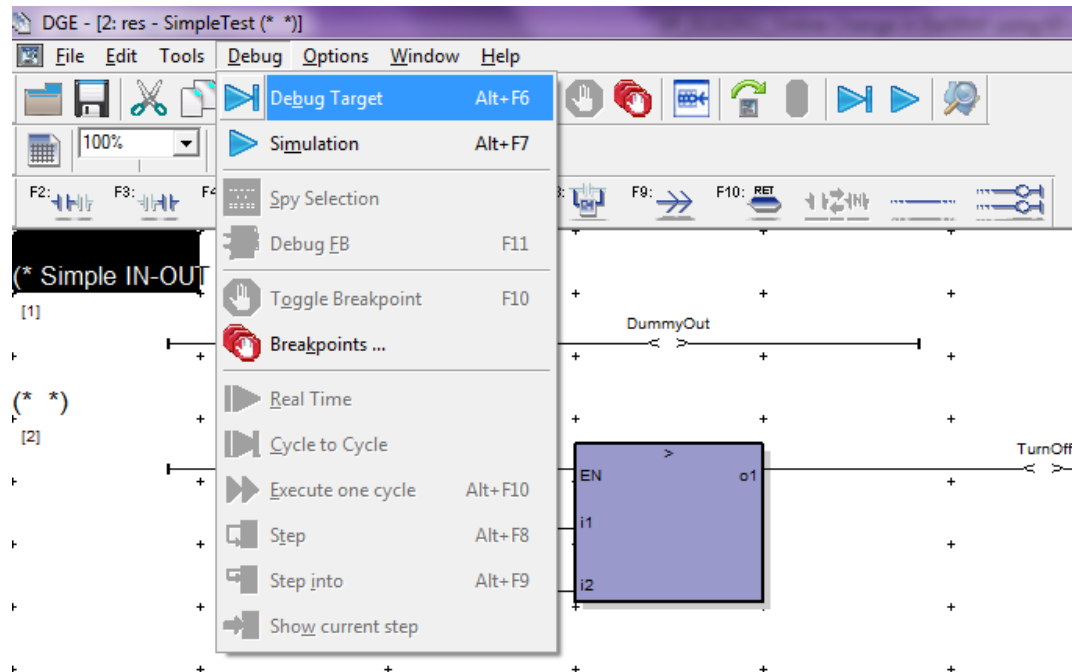


Figure 15: Debugging the target to verify the online change was successful.