# Configuring Allen Bradley RSLinx and RSLogix for Use with RS Emulate

RSLogix, RSLinx and RSLogix Emulate may be used together to simulate the programming and operation of a PLC on your personal computer. RSLogix Emulate is a troubleshooting and debugging tool that can emulate most operations of Allen-Bradley processors. It executes your ladder logic programs in your computer, updating your programs' data tables, allowing you to approximate what is going to happen when you download your programs to physical PLCs.

Begin by executing the `All Programs->Rockwell Software->RSLinx->RSLinx Classic` utility. If the RSLinx software is executing, the icon should be present in the system tray. The RSLinx software must be running to allow RSLogix and RSLogix Emulate to communicate. When all software is correctly configured, opening RSLinx should show the state of the simulated PLC in a window similar to Figure 1 below.
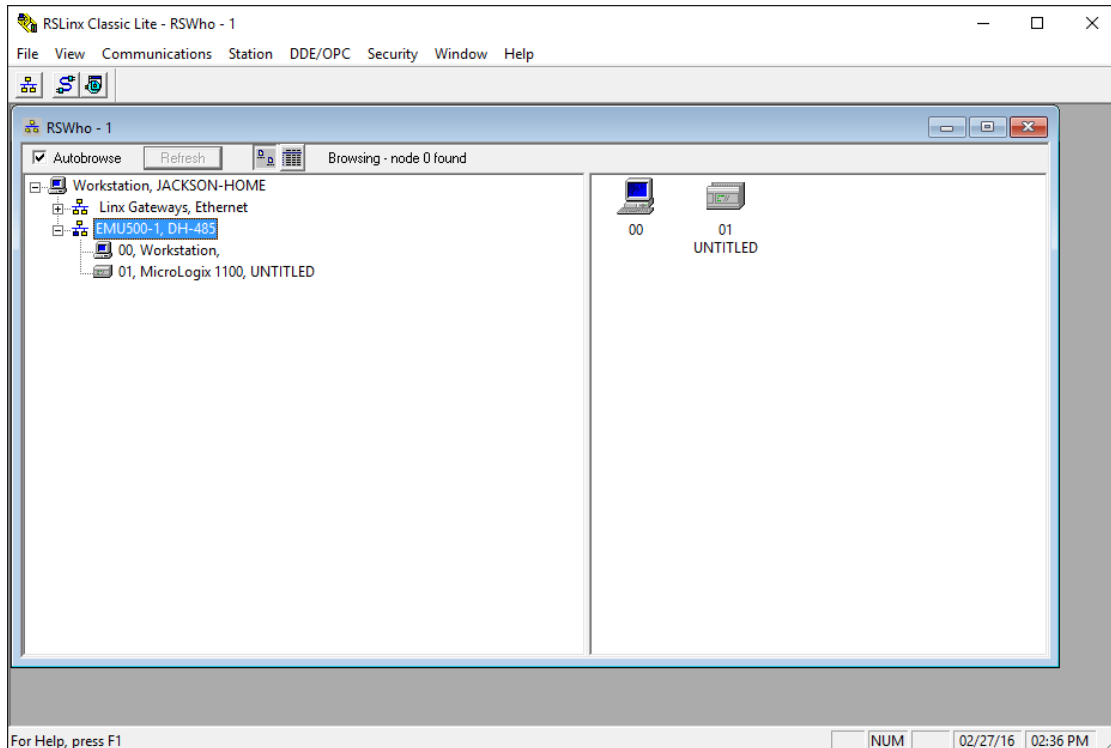
Figure 1. RSLinx with RSWho Browsing Emulated MicroLogix 1100 PLC.

The communication parameters within RSLinx must be configured by first selecting a driver (`Communications->Configure Driver`). Selecting `SLC 500 (DH485) Emulator driver` as the driver type and then selecting the driver name as `EMU500-1` (the default). The Station Number assignment should be 00 (the default).

With the communication driver setup, the RSLogix software may be used to define a program for execution on the emulated PLC. The startup state of the RSLogix software is shown in Figure 2.
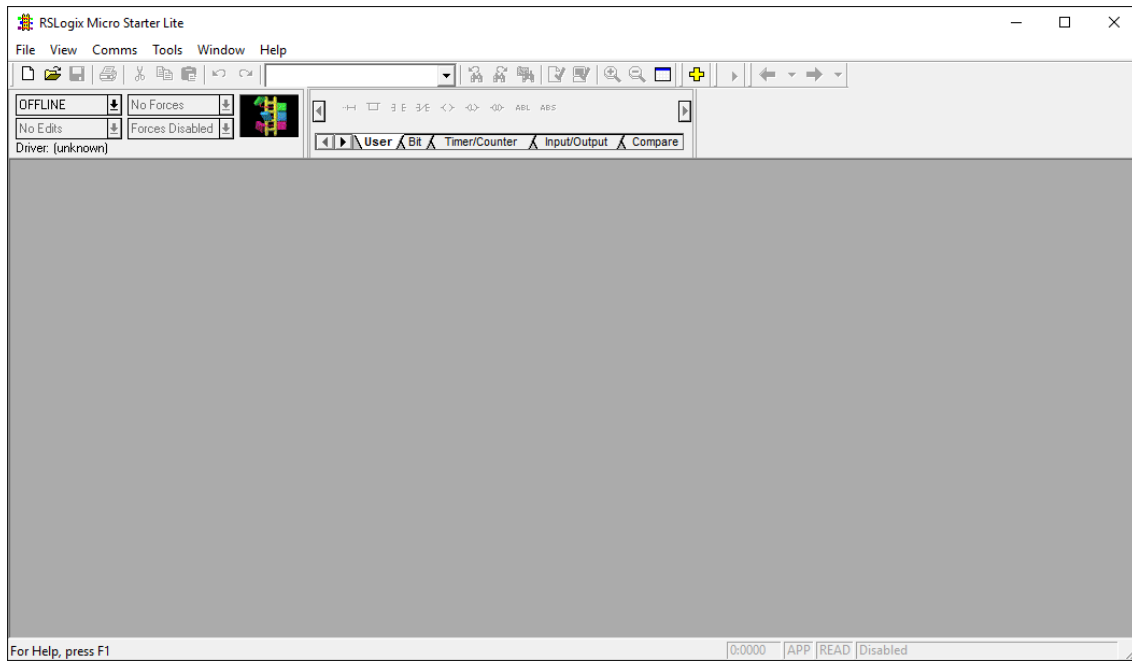
Figure 2. RSLogix Startup Screen.

The first step in the creation of a new ladder logic program is the specification of the processor type, the communication driver, and the processor node number. For our installation, the processor type will be the MicroLogix 1100 (Series B). The communications settings will set the driver type (`EMU500-1`), the processor node number (we will use the default), and the timeout (10 sec. is the default value).

Select `File->New` to begin a new PLC program. The screen capture shown in Figure 3 gives the appropriate processor type settings. The processor should be the Micrologix 1100 Series B and The communication driver should be the EMU500-1.
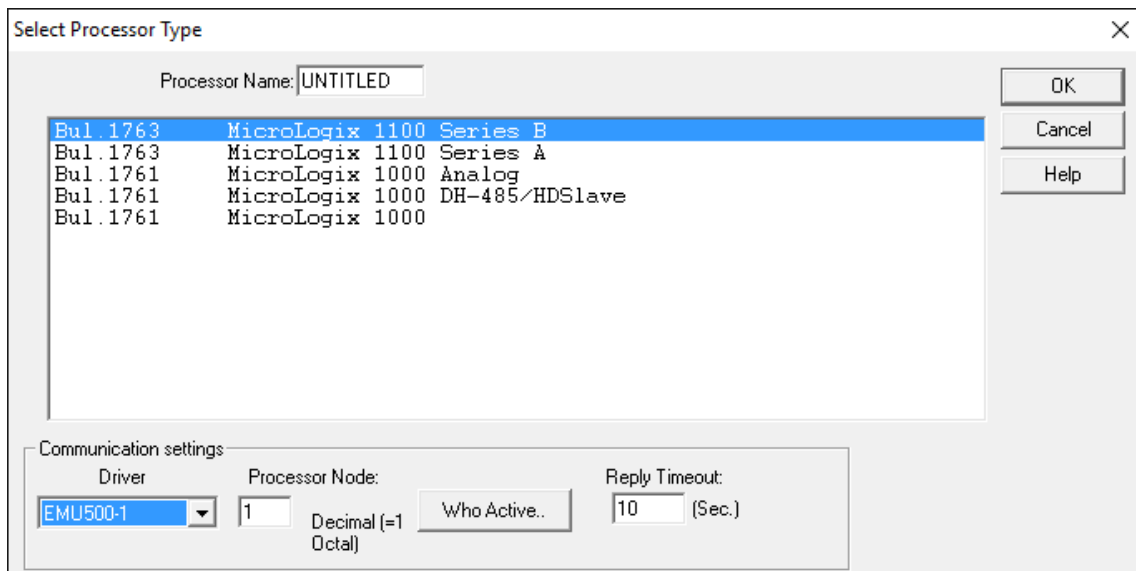

Figure 3. Processor Type Configuration Screen

After the processor type is configured, an empty ladder diagram is displayed within RSLogix as shown in Figure 4 below.
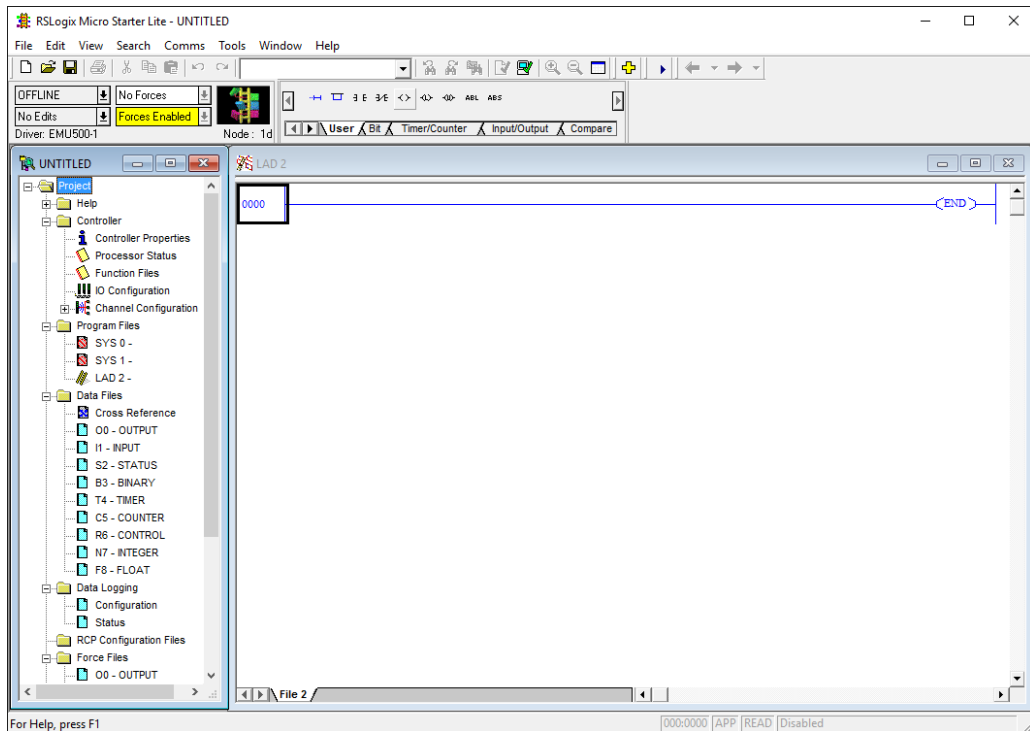
Figure 4. RSLogix Ladder Logic Screen.

The next step in the configuration process requires the identification and selection of all I/O modules attached to the PLC and the specification of their location (under **Controller**, select **IO Configuration**). The **1762-IF2OF2** module should be selected into slot one. Results of this configuration step are shown in Figure 5.
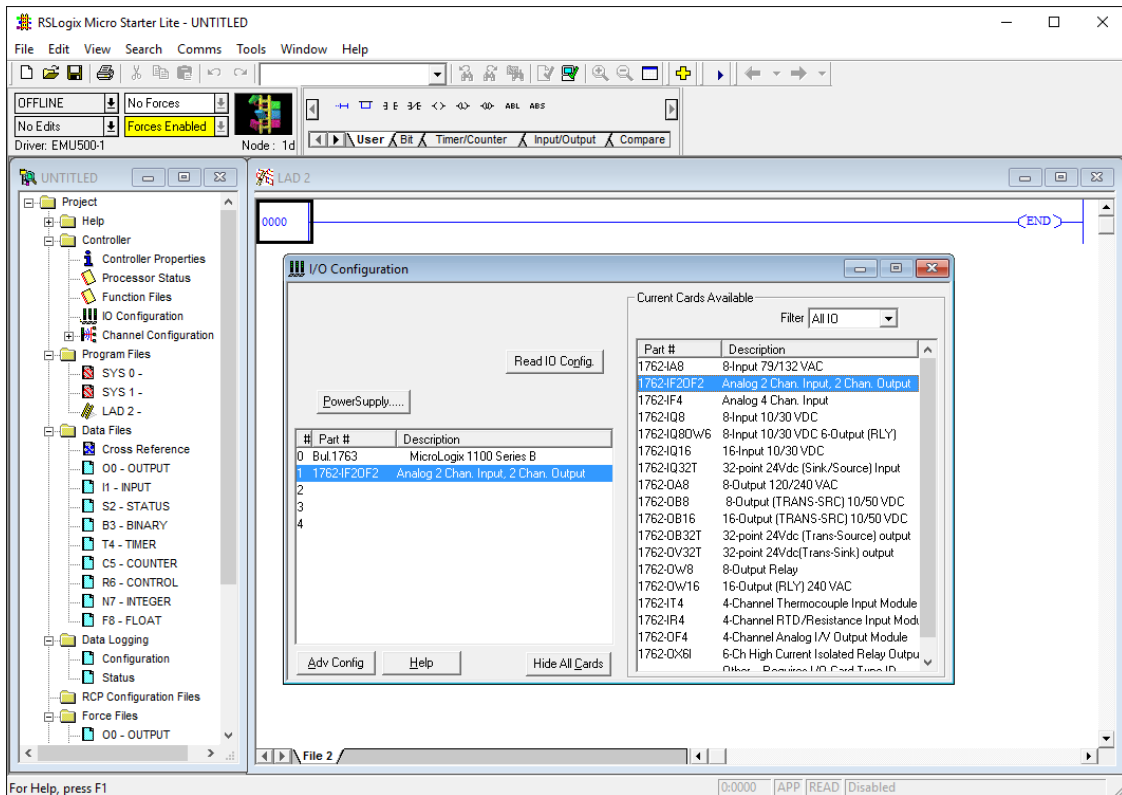
Figure 5. I/O Configuration Screen.

The communication channel configuration parameters should be verified by selecting the **`Channel Configuration`** entry located under the controller folder. The settings under the "**`General`**", "**`Channel 0`**" and "**`Channel 1`**" tabs should match Figures 6, 7 and 8 given below. Changes may be made only on the "**`Channel 0`**" and "**`Channel 1`**" tabs. In the "**`Channel 1`**" tab, Make sure that the **`BOOTP Enable`** check box is not checked and that the **`DHCP Enable`** check box is checked. This step is not absolutely necessary with the emulator, but it is good practice to complete this configuration step as it is required when programming the actual PLC.
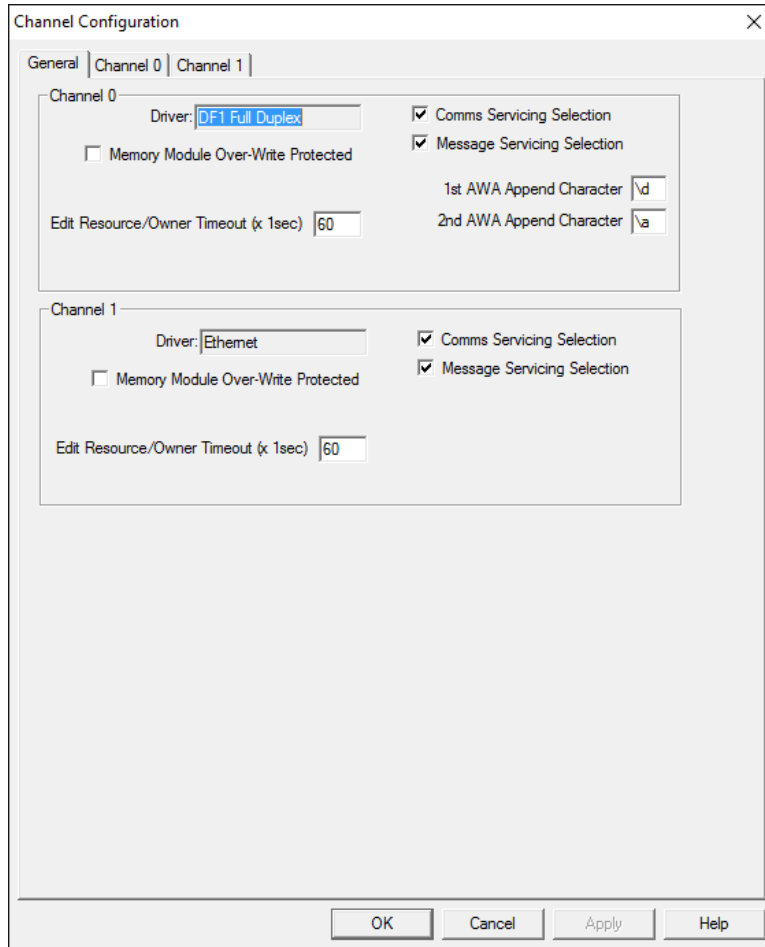
Figure 6. Channel Configuration Screen (General Tab).

Figure 7. Channel Configuration Screen (Channel 0 Tab).

Figure 8. Channel Configuration Screen (Channel 1 Tab).

At this point, the program is completely configured and ladder logic instructions may be added. Figure 9 shows a screen capture with the state of the RSLogix software with selected data tables displayed.
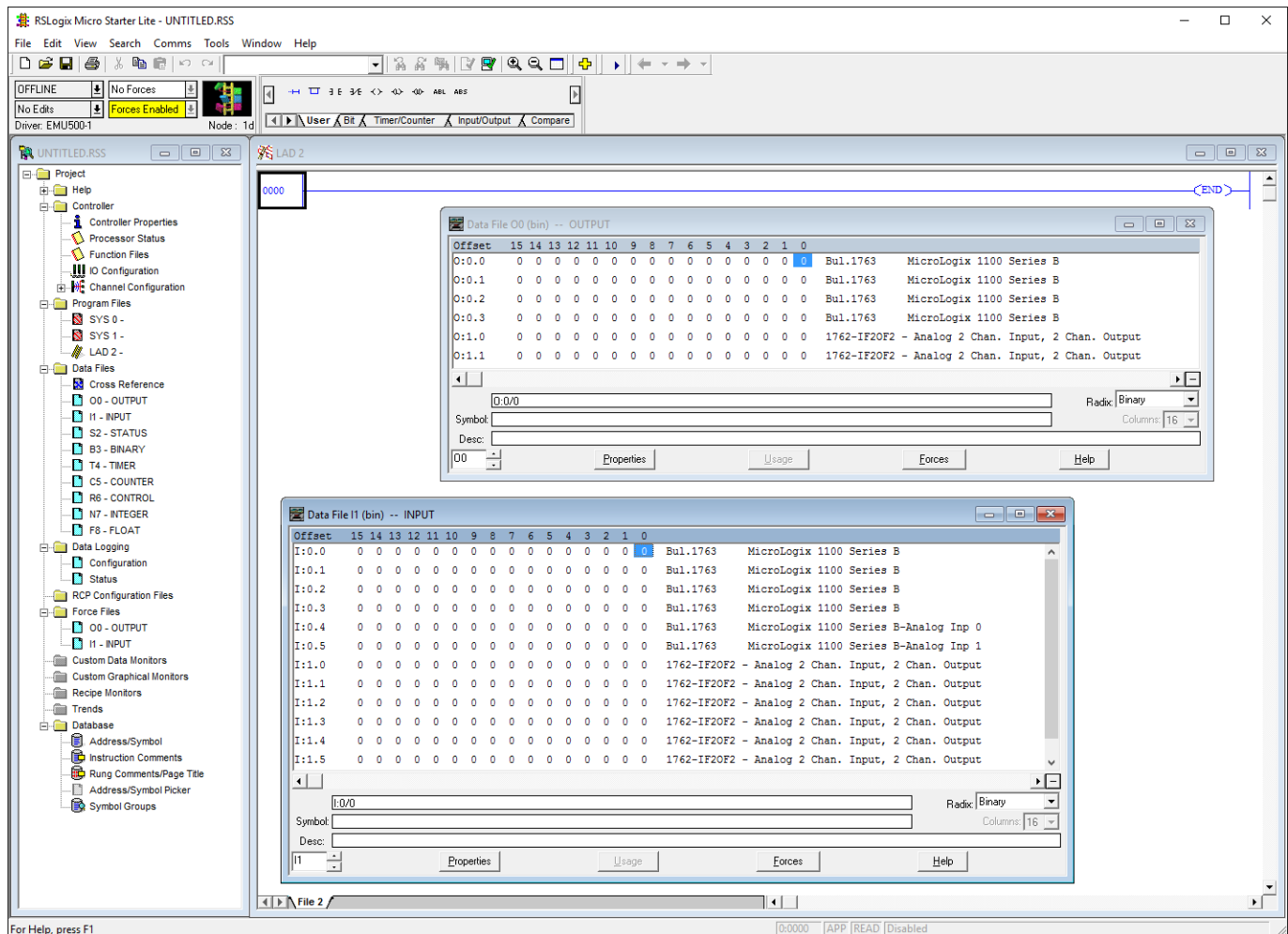

Figure 9. RSLogix with Sample Data Files Shown.

After the ladder logic code is written, commented, and saved to a file, it must be verified (for syntactic correctness) before being downloaded to the simulated PLC. The computer icon with the check symbol on the menu can be used to accomplish this. If the program verifies as syntactically correct, it can be downloaded to the simulated PLC using the drop down box normally labeled as OFFLINE in Figure 9. Select "Download" in this dropbox and follow the dialog boxes to complete the download of the program to the emulated PLC. This drop down box displays the state of the communication with the PLC: OFFLINE, REMOTE PROG, RUN, etc. This action should cause the RSLogix Emulate software to start and simulate the operation of the PLC. The emulated PLC can be switched into RUN mode using the same drop down box. Figure 10 shows the state of a sample ladder logic program as the emulated PLC is in RUN mode.
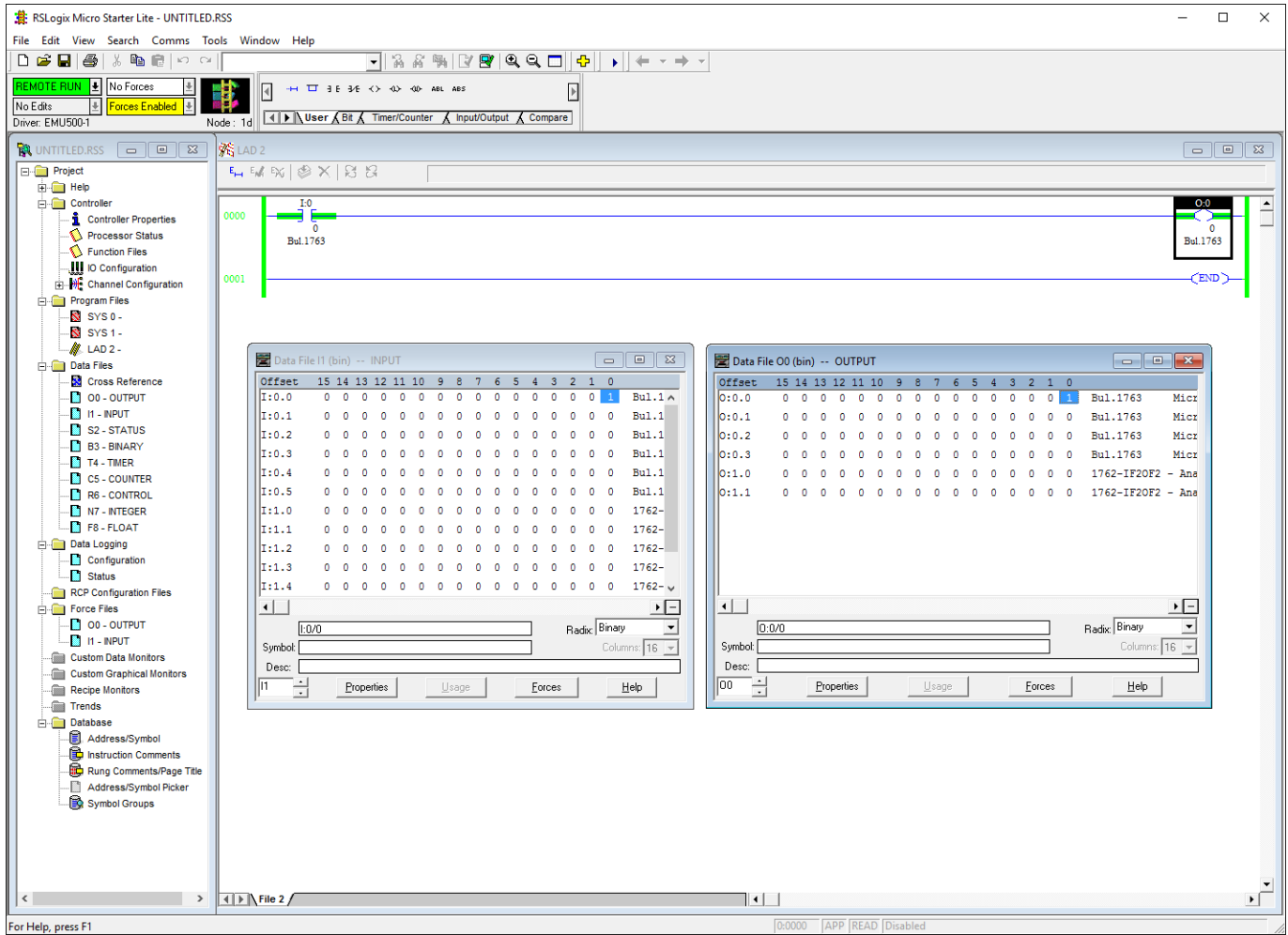
Figure 10. RSLogix with Sample Program and Emulated PLC in RUN Mode.