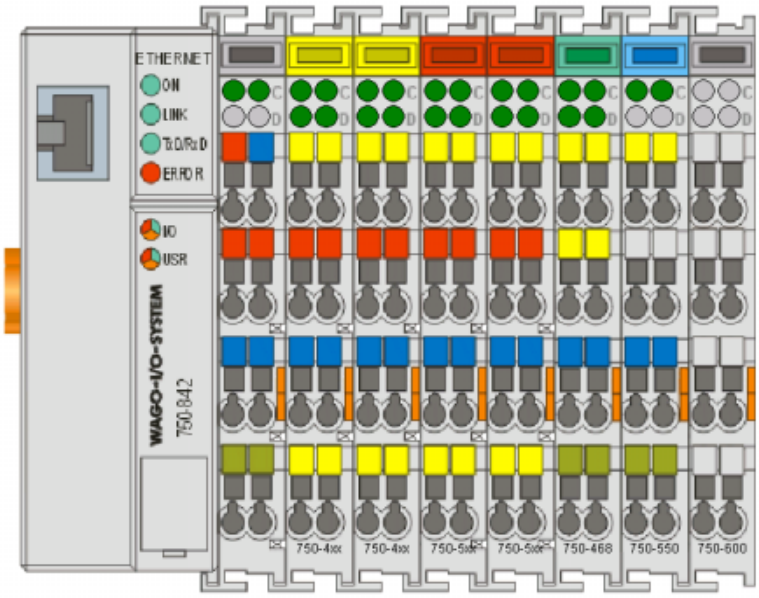
WAGO I/O SYSTEM 750

Configuring WAGO Ethernet with National Instruments LabVIEW via Lookout OPC Server



Application note

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WAGO®
INNOVATIVE CONNECTIONS

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Every conceivable measure has been taken to ensure the correctness and completeness of this documentation. However, as errors can never be fully excluded we would appreciate any information or ideas at any time.

We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally trademark or patent protected.

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1 Important comments

To ensure fast installation and start-up of the units described in this manual, we strongly recommend that the following information and explanation is carefully read and adhered to.

1.1 Legal principles

1.1.1 Copyright

This manual is copyrighted, together with all figures and illustrations contained therein. Any use of this manual which infringes the copyright provisions stipulated herein, is not permitted. Reproduction, translation and electronic and photo-technical archiving and amendments require the written consent of WAGO Kontakttechnik GmbH. Non-observance will entail the right of claims for damages.

1.1.2 Personnel qualification

The use of the product detailed in this manual is exclusively geared to specialists having qualifications in PLC programming, electrical specialists or persons instructed by electrical specialists who are also familiar with the valid standards. WAGO Kontakttechnik GmbH declines all liability resulting from improper action and damage to WAGO products and third party products due to non-observance of the information contained in this manual.

1.1.3 Intended use

For each individual application, the components supplied are to work with a dedicated hardware and software configuration. Modifications are only admitted within the framework of the possibilities documented in the manuals. All other changes to the hardware and/or software and the non-conforming use of the components entail the exclusion of liability on part of WAGO Kontakttechnik GmbH.

Please direct any requirements pertaining to a modified and/or new hardware or software configuration directly to WAGO Kontakttechnik GmbH.

1.2 Range of validity

This application note is based on the stated hardware and software of the specific manufacturer as well as the correspondent documentation. This application note is therefore only valid for the described installation.

New hardware and software versions may need to be handled differently. Please note the detailed description in the specific manuals.

2 Description

The purpose of this document is to provide step-by-step procedures for configuring National Instruments' LabVIEW for communications with WAGO's Ethernet TCP/IP I/O. The procedures that follow illustrate how to configure National Instruments' Lookout Protocol Drivers OPC Server to handle the Modbus/TCP communication services, and how to attach data made available by the OPC Server to discrete controls and indicators in a sample LabVIEW application.

The procedures in this document have been tested with (but are not limited to) the following hardware/software configuration:

- Intel Pentium III based PC running Windows NT 4.0 Operating System with Service Pack 6
- National Instruments LabVIEW 6i
- National Instruments Lookout Protocol Drivers OPC Server, Version 4.0
- 3 Com Ethernet Network Interface Card
- WAGO 750-342 Ethernet TCP/IP Buscoupler
- WAGO 750-400 2pt. Digital Input Module, 24VDC
- WAGO 750-501 2pt. Digital Output Module, 24VDC
- CAT-5 Crossover Cable for Ethernet Communications

For other details about WAGO I/O please refer to the WAGO Users Manuals.

The User Manuals can be downloaded from the web site www.wago.com

3 Reference Material

3.1 Procedure 1: Configuring the OPC Server

1) Begin by running the OPC Server configurator *Lookout Protocol Drivers OPC Server 4.0*.

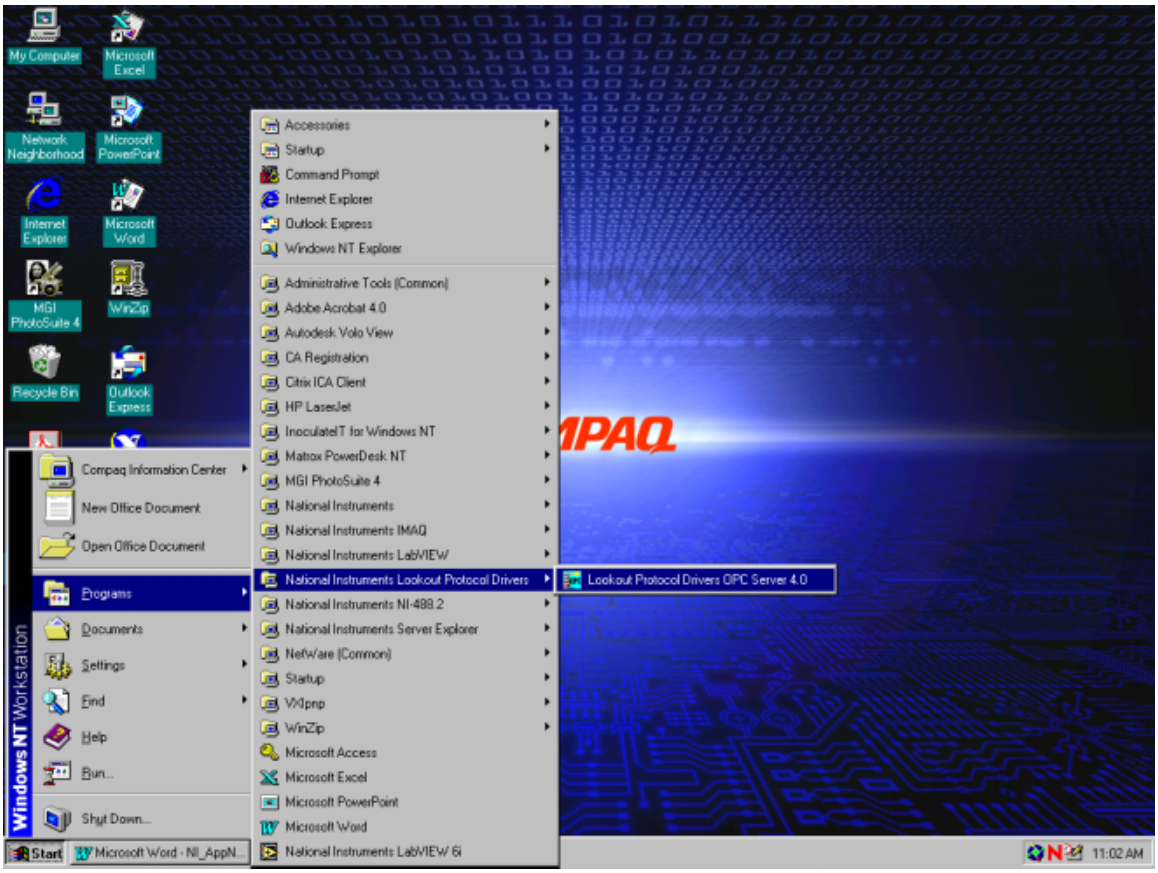

Figure 1: Running the OPC Server Configurator.

2) Select **File** -> **New…** from the top menu.

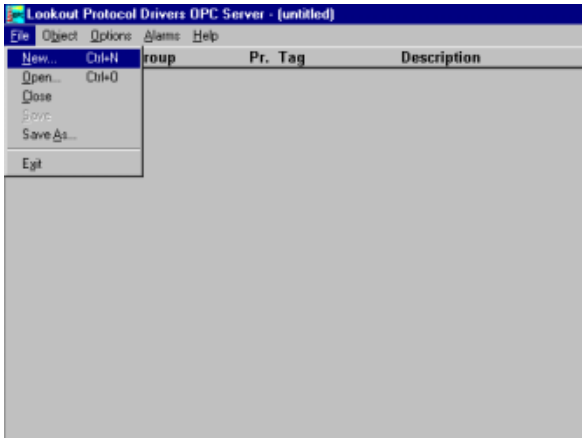

Figure 2: Start a New Configuration.

3) Select **Object** -> **Create…** from the top menu.

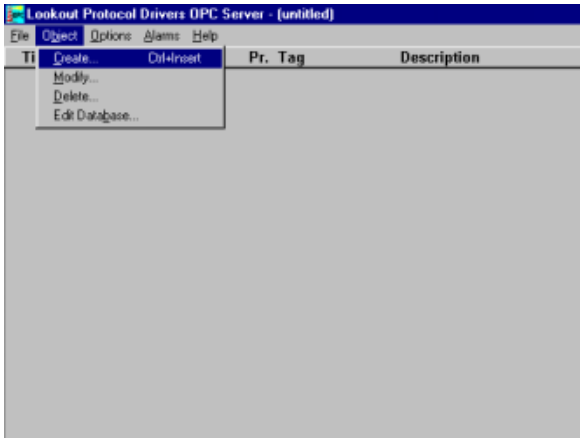

Figure 3: Create a new database.

4) Select **Modbus** as the Object Class and click **Ok**.

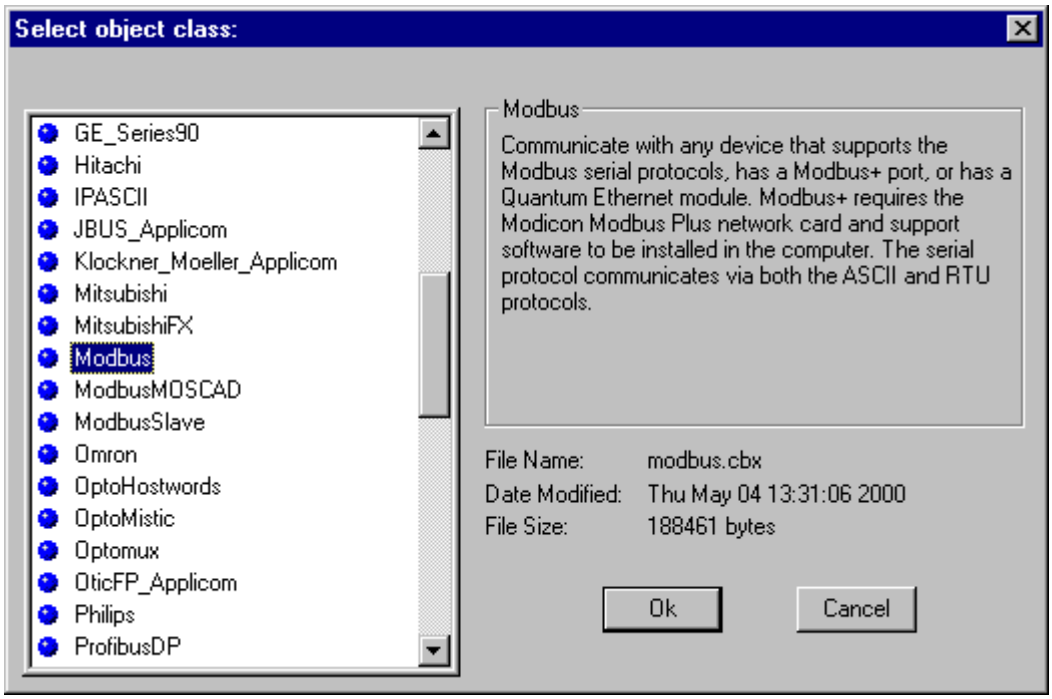

Figure 4: Select Modbus as the Object Class.

5) In the *Create Modbus Secondary* window, select **Modbus Ethernet** for the mode, enter the node's **IP Address**, and give the connection an appropriate name (e.g. **EthernetConnection**). Click **Ok** when finished.

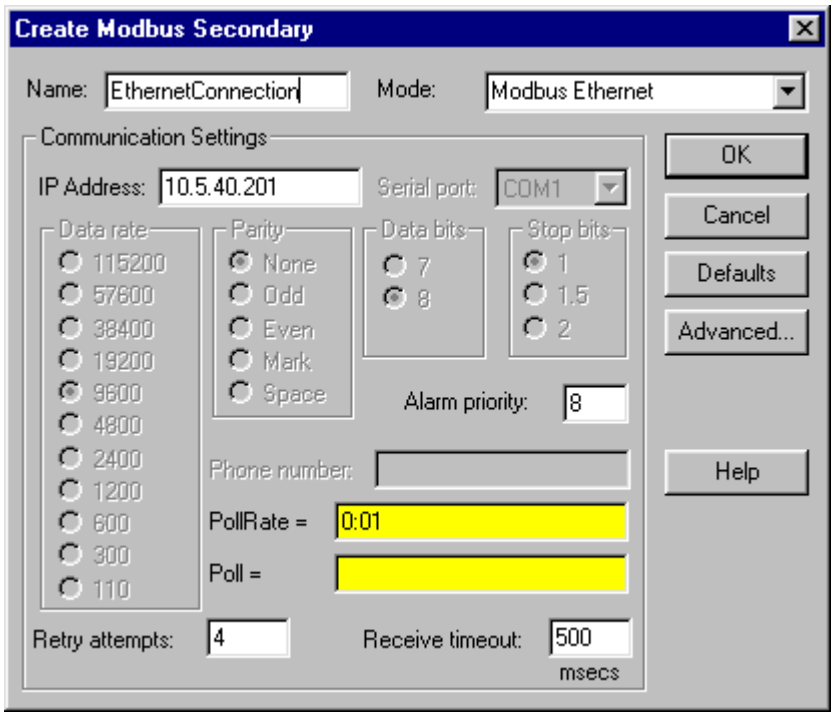

Figure 5: Defining the ethernet connection.

6) Select **Object** -> **Edit Database…** from the top menu.

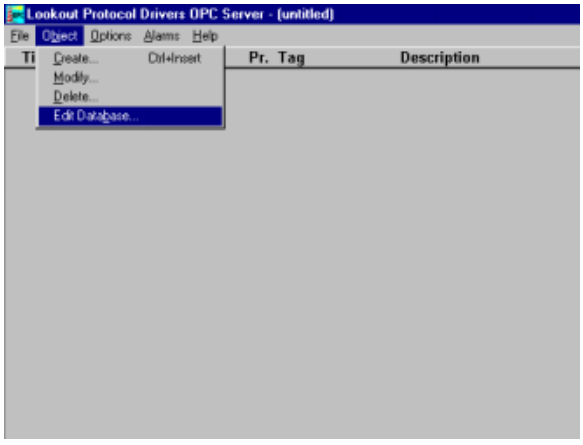

Figure 6: Edit the database.

7) In the *Edit Object Database* window, select the database created in steps 3 through 5 (**EthernetConnection**), and click **Ok**.

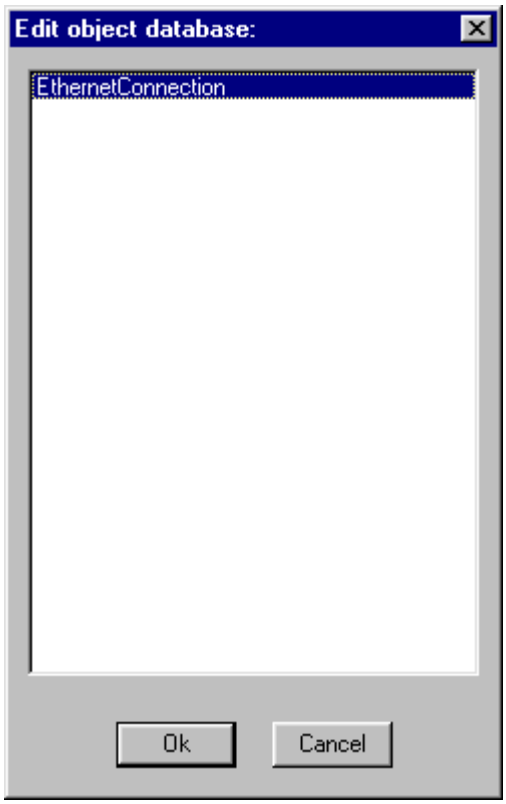

Figure 7: Select database to edit.

8) Configure the I/O points for the application by entering in the **Member** (I/O Address) and **Description** for each point of I/O. Click **Save** after each Member and Description entry. The following table shows the Members and Descriptions used in this example:

Member	Description
000001	WAGO Node 1 Output 1
000002	WAGO Node 1 Output 2
100001	WAGO Node 1 Input 1
100002	WAGO Node 1 Input 2

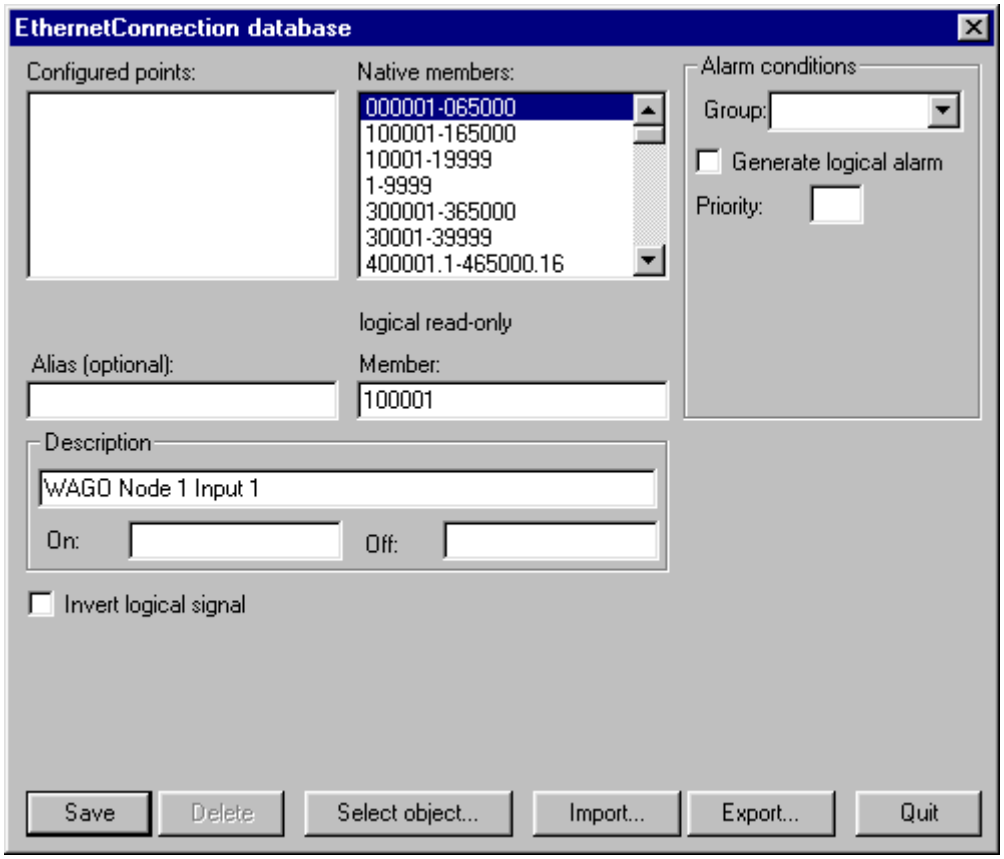

Figure 8: Editing the database.

9) Click **Quit** when all Members and Descriptions have been entered.

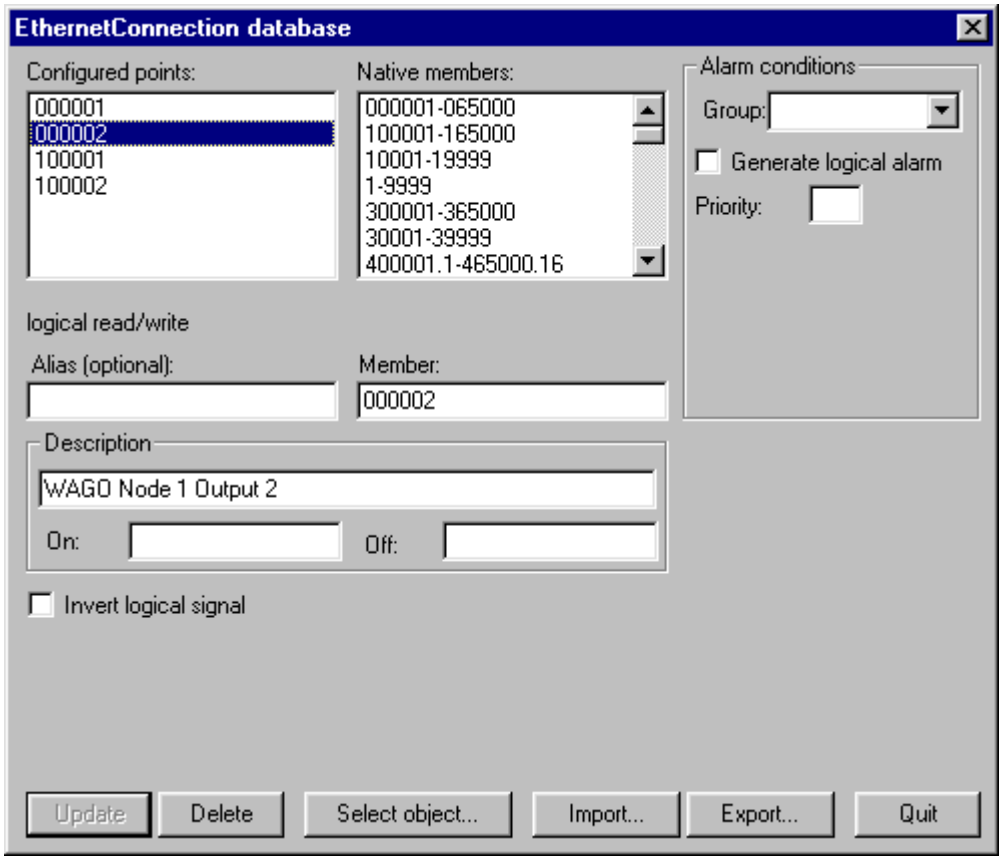

Figure 9: Completing the database.

10) Select **File -> Save As**… from the top menu.

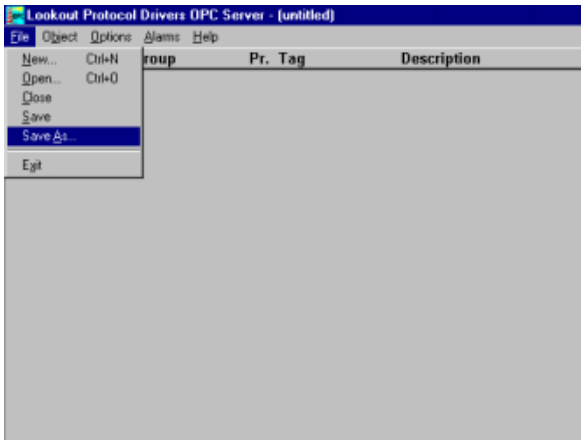

Figure 10: Saving the Process File.

11) Type in an appropriate filename (e.g. **WAGO_ModbusTCP_Connection**), and click **Save**.

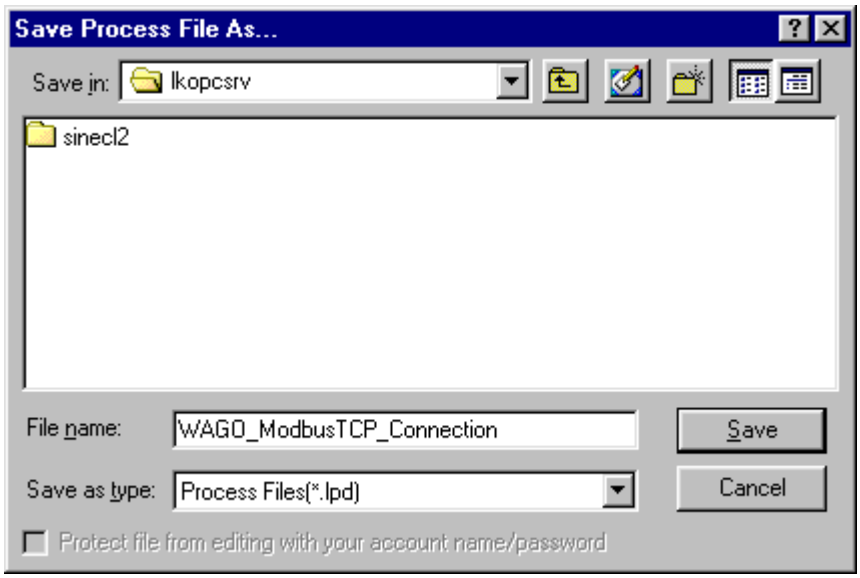

Figure 11: Saving the Process File (continued).

12) Select **File -> Exit** from the top menu.

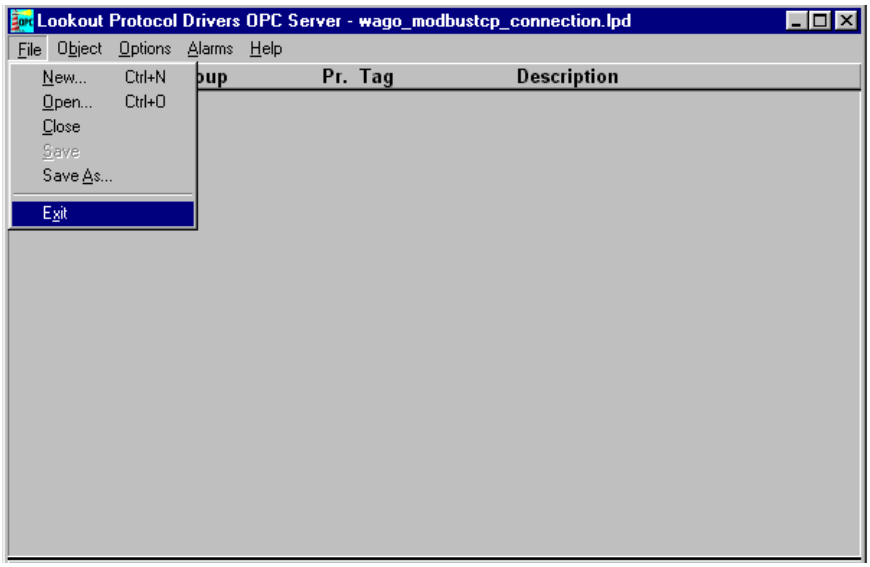

Figure 12: Exit the OPC Server Setup Tool.

13) When prompted to make the current process file the startup file, click **Yes**. The application will exit, and the OPC Server configuration will be completed.

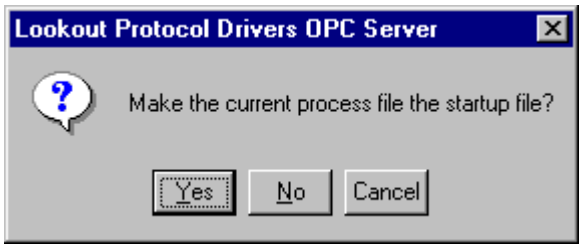

Figure 13: Make the current process file the startup file.

3.2 Procedure 2: Writing a client application in LabVIEW.

1) Begin by running the *LabVIEW 6i* development software.

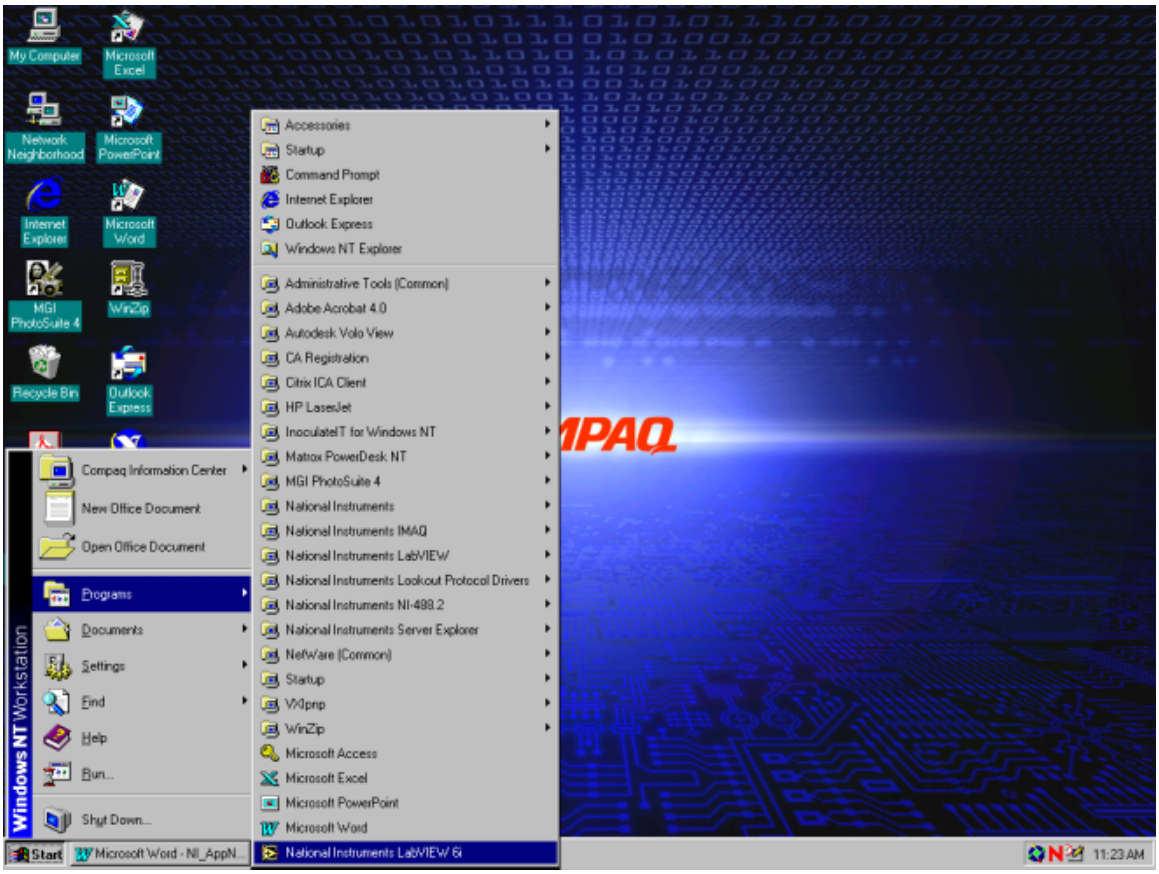

Figure 14: Starting LabVIEW.

2) Select **New VI**.

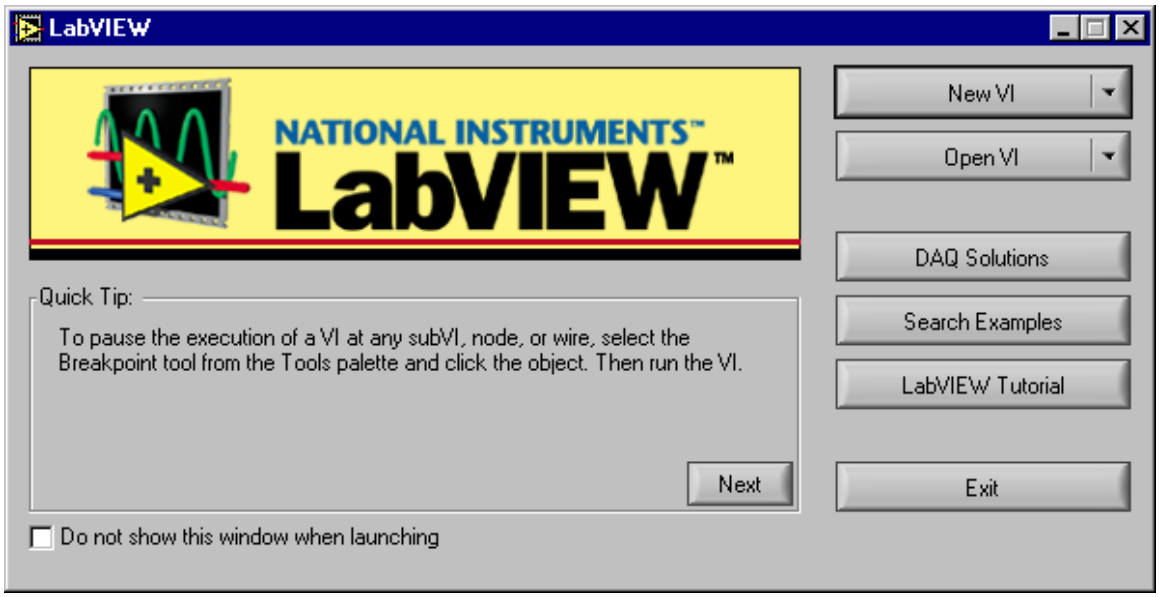

Figure 15: Starting a New VI.

3) Create an application similar to the sample shown in the following figures. Reference **LabVIEW's** Help menu for assistance with creating this application. Do not be concerned with associating the four onscreen indicators with real world I/O at this time. This operation is described in upcoming steps.

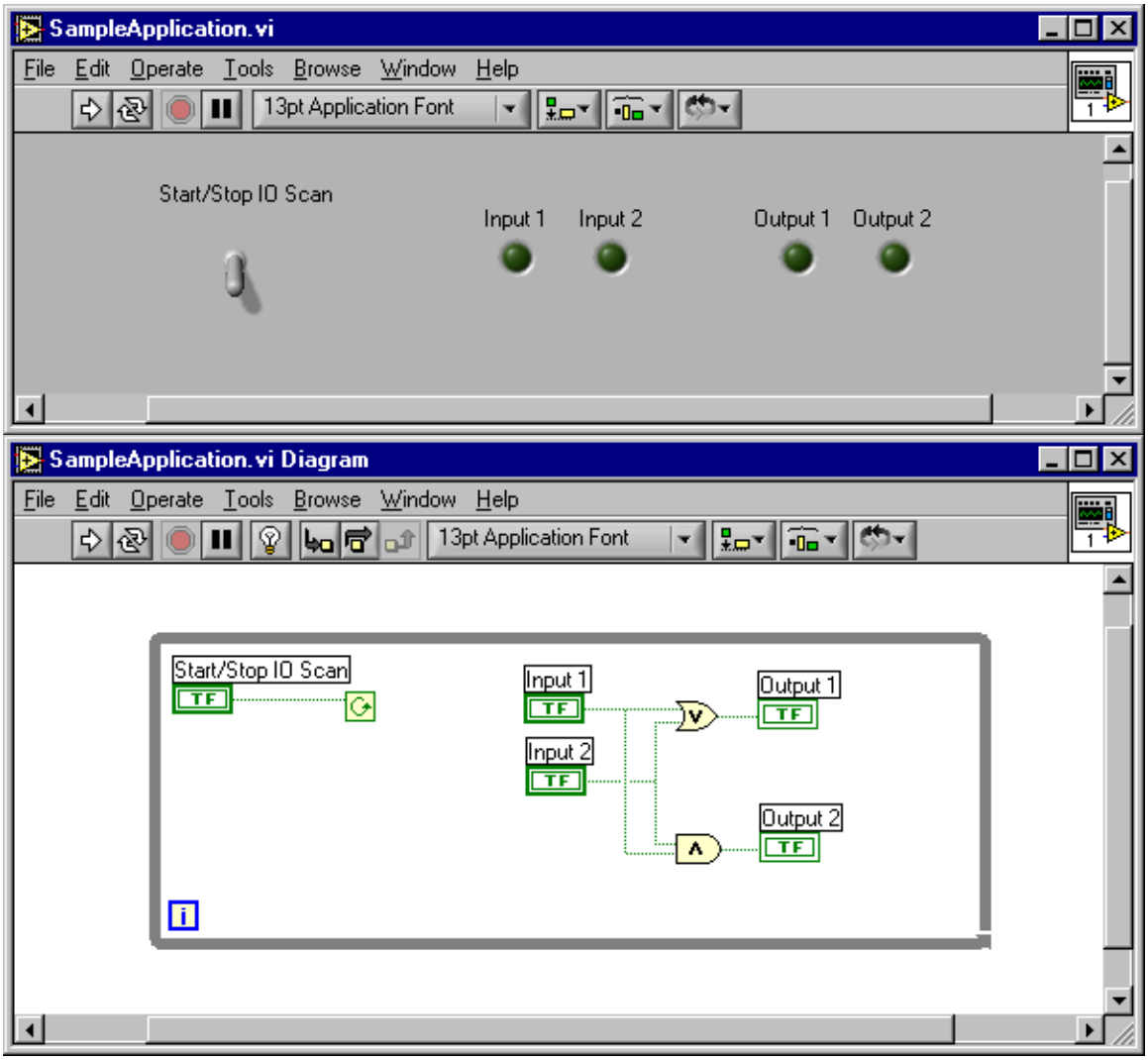

Figure 16: Sample Application.

4) Now we will attach each onscreen indicator to a real world I/O address. Start by right clicking on the **Input 1** indicator. Select **Data Operations** -> **DataSocket Connection…** from the menus.

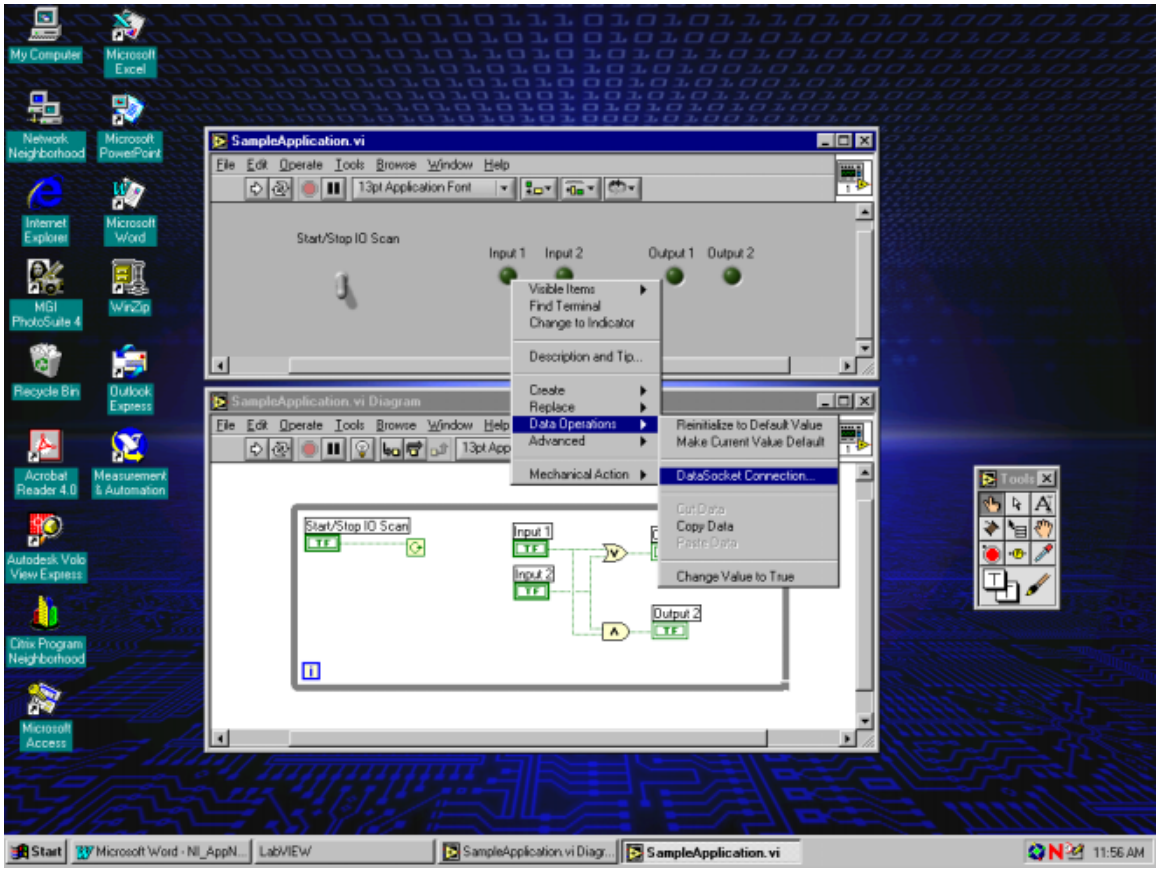

Figure 17: Making a DataSocket Connection.

5) Click on **Browse…** to locate a DataSocket Connection.

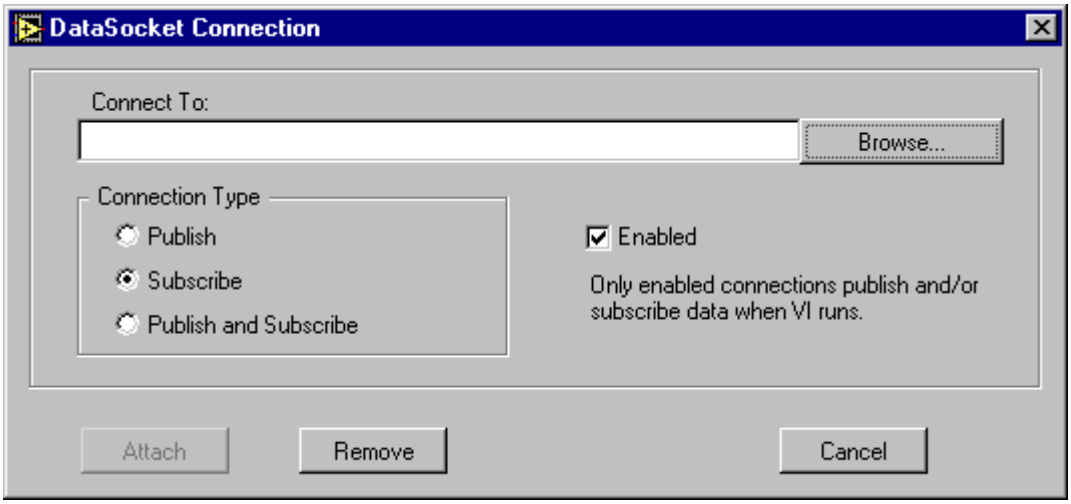

Figure 18: Browsing for an Item.

6) **Select** Browse Measurement data… **from the menu**.

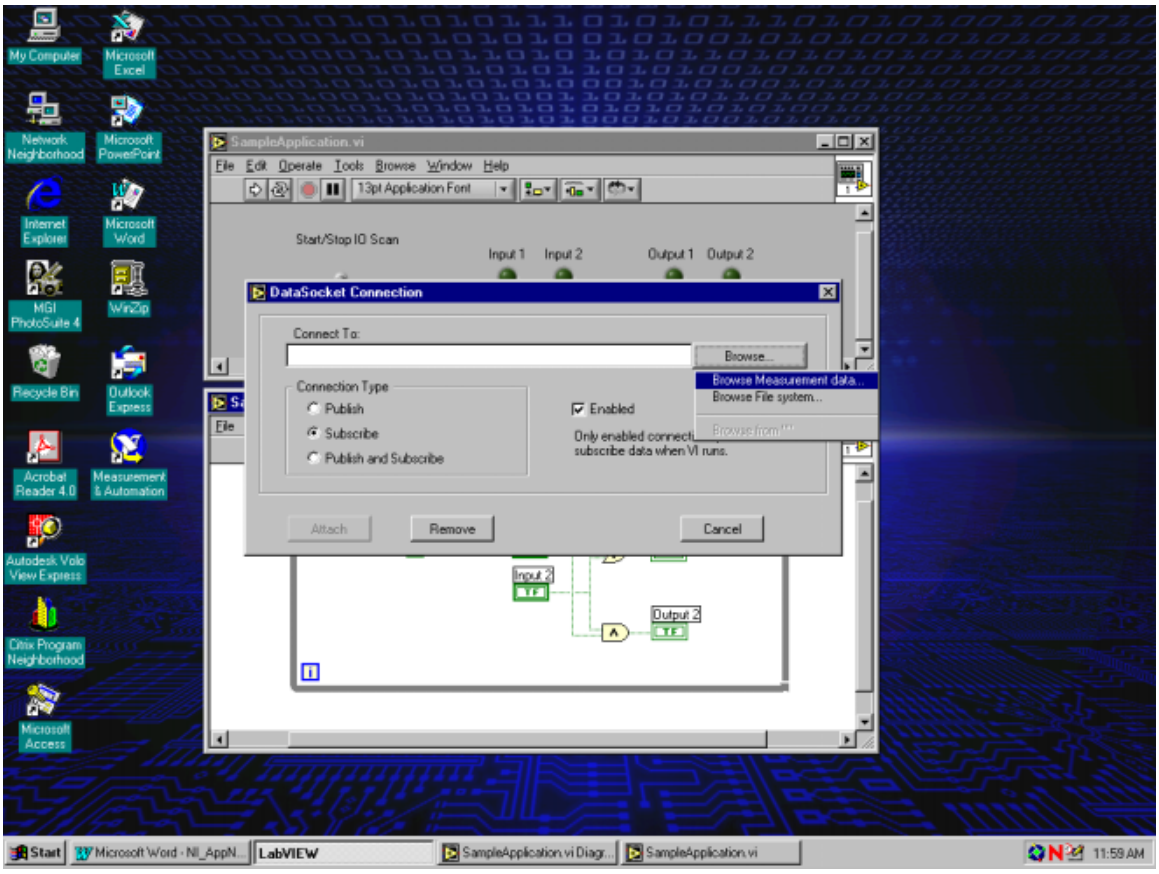

Figure 19: Browsing for an Item (continued).

7) Expand the directory tree structure as shown, and select item **100001** from the item list. Click **Ok** to continue.

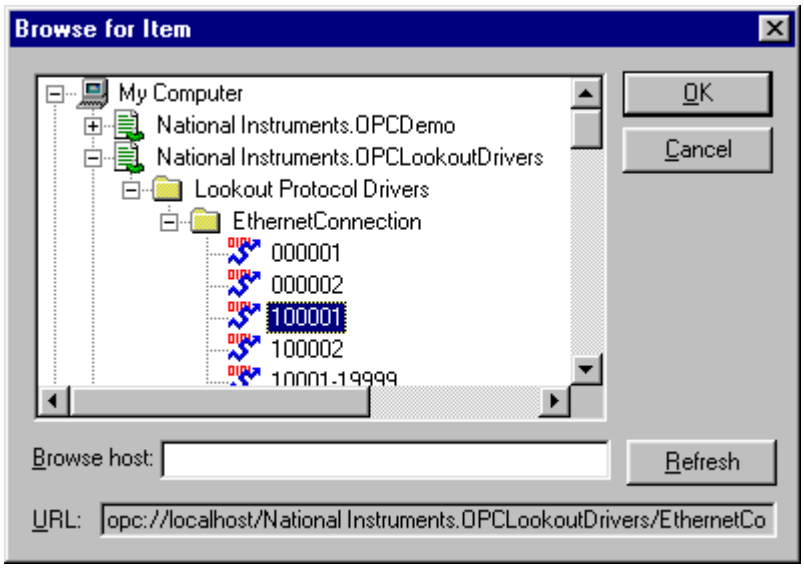

Figure 20: Browsing for an Item (continued).

8) Click on **Attach** to complete the operation.

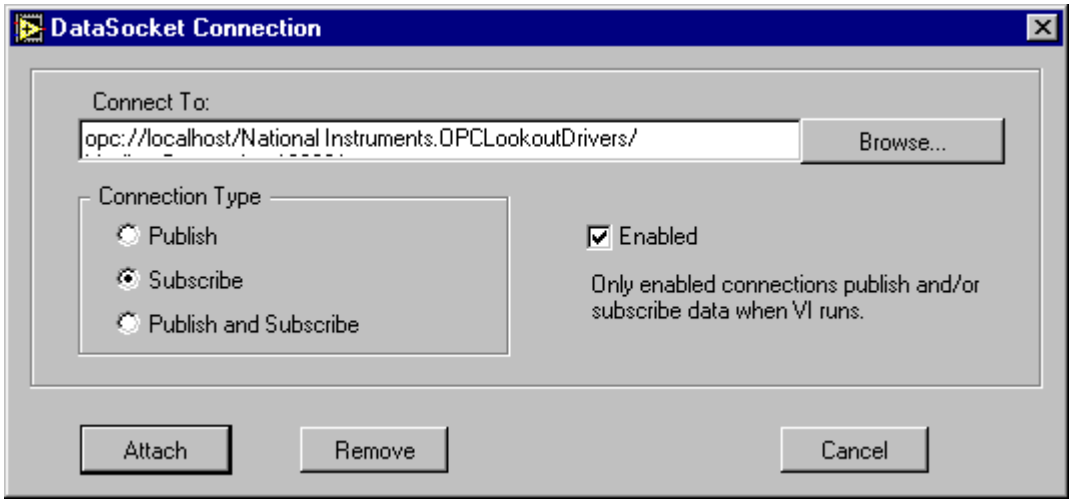

Figure 21: Completing the Attachment.

9) Repeat steps 4 thru 8 to attach **Input 2**, **Output 1**, and **Output 2** to real world I/O addresses. Note that when attaching the Outputs, it is necessary to select **Publish** as the connection type.

10) When completed, the application is ready to run. Click on the *white arrow* icon to run, and click on the *Start/Stop I/O Scan* switch to begin execution. If successful, the onscreen indicators will illuminate as voltage is applied to the inputs and the logic solves true for the outputs.

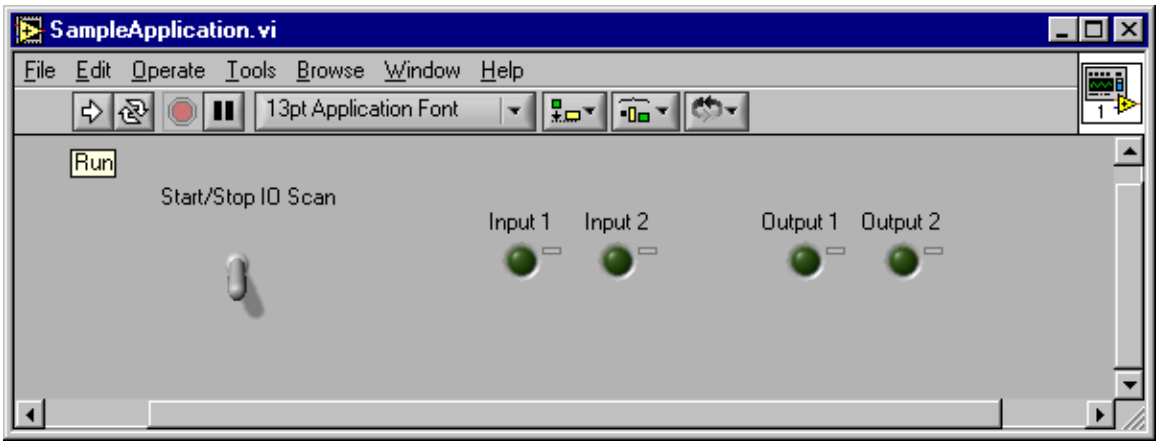

Figure 22: Starting the Sample Application.

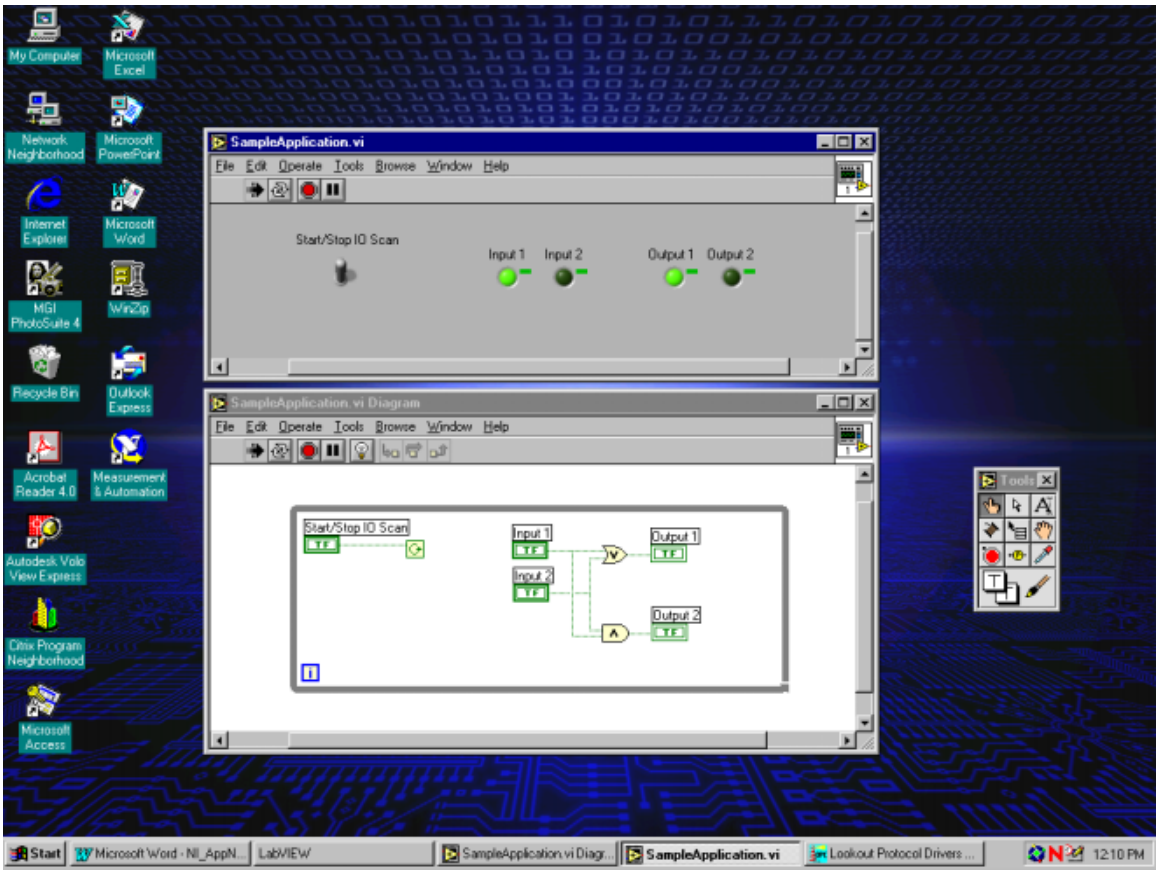

Figure 23: The Running Sample Application.

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