



## Configuring LabVIEW for Communications with Acromag Busworks Modbus I/O Modules via an OPC Server

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### Introduction

National Instruments LabVIEW can be used to monitor and control Acromag Busworks Modbus I/O Modules via an OPC server. A separate application note, **Configuring Kepware KEPServerEX for Communications with Acromag Busworks Modbus I/O Modules**, outlines configuration of a KEPServerEX OPC server. This document focuses on setting up controls and indicators in LabVIEW to read and write the OPC server tag data.

The following hardware and software were used in the creation of this document:

- Microsoft Windows 2000 – Service Pack 4
- LabVIEW 7 Express (version 7.0)
- Kepware KEPServerEX (version V4.150.304 – U) with Modicon Modbus Driver Suite
- Acromag Model 914MB Quad DC Voltage Input (Modbus/RS485)

Note that this document does not cover the DCOM and firewall configuration settings required to allow remote clients to connect to the server. Good sources of information on this topic are the Kepware and OPC Foundation websites.

## LabVIEW Client Example

The following example will create a simple LabVIEW application that will communicate with an Acromag 914MB. The front panel of the application will have an indicator to read an input voltage and a button to toggle a digital output.

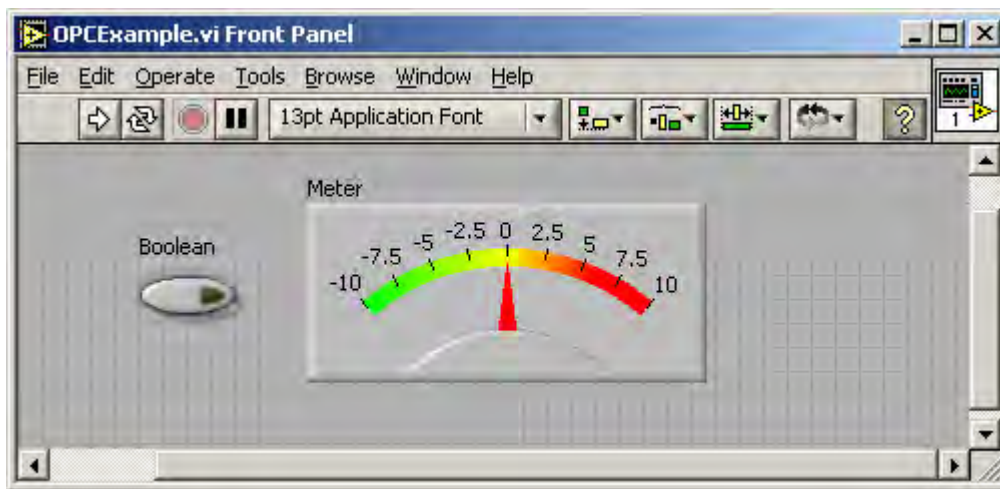
The OPC server was previously configured with two tags corresponding to the input voltage and digital input:

Tag Name	Address	Data Type	Client Access
DigitalOutput0	00001	Boolean	Read/Write
Ch0InputValue	30003	Double *	Read Only

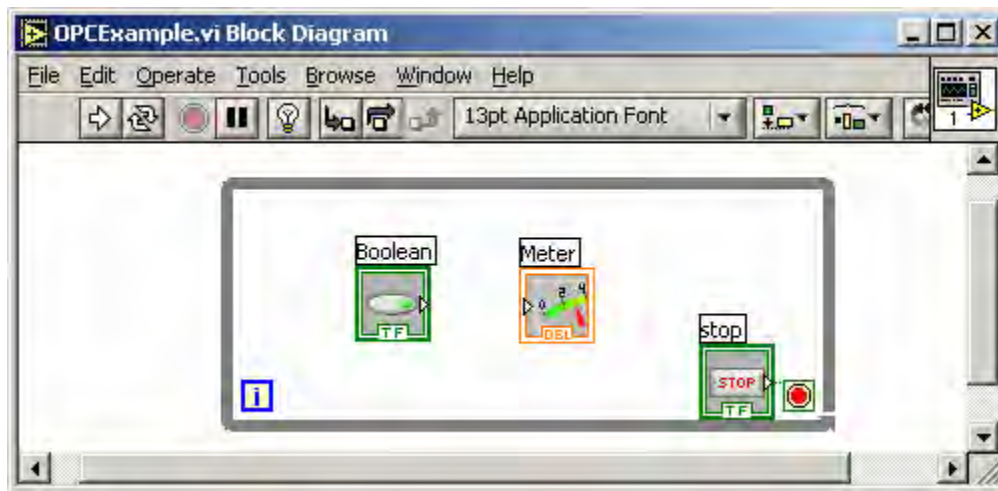
\* This tag uses data scaling to map the 16-bit register value to a  $\pm 10V$  range.

The following steps are used to create the LabVIEW application:

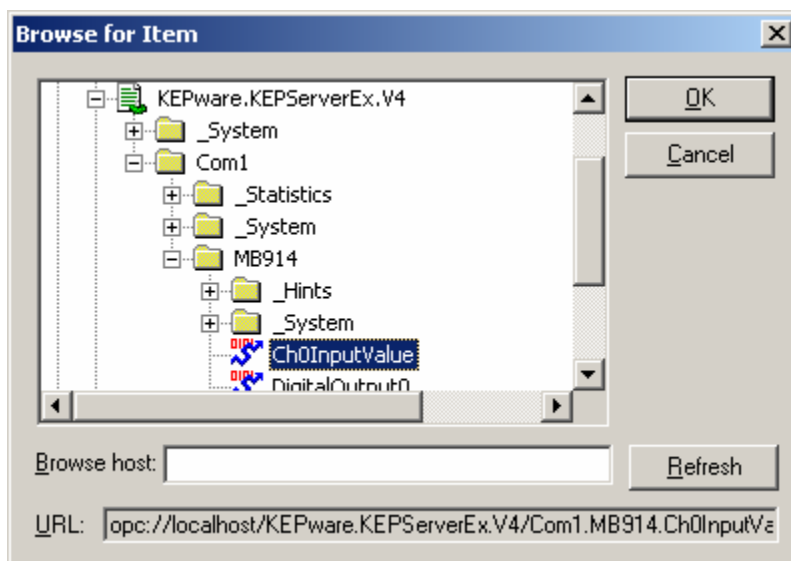
1. Launch LabVIEW 7 Express and select **New Blank VI** from the start up screen.
2. Add a Push Button and Meter to the Front Panel. Change the scale of the meter to  $\pm 10$ .



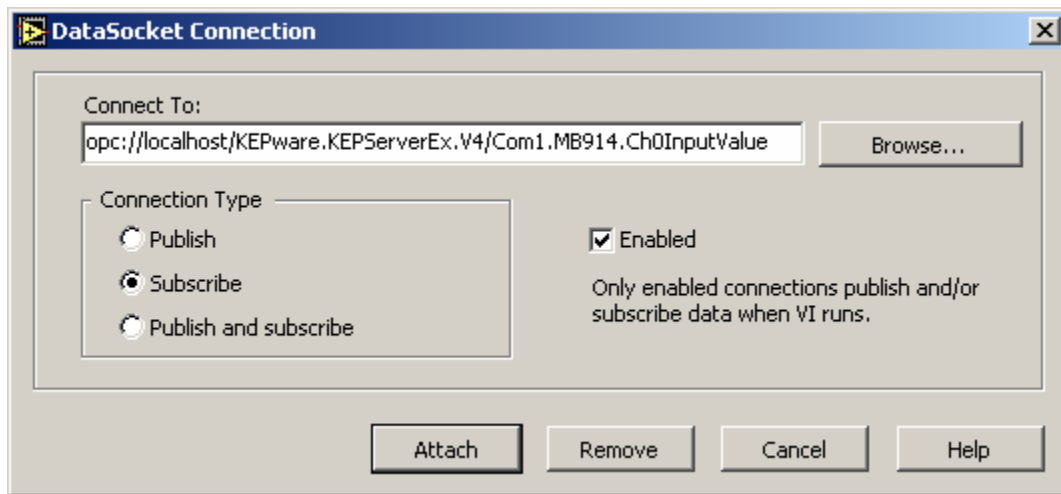
3. Place a while loop around the controls on the block diagram.



4. Right-click on the Meter indicator and select **Data Operations | DataSocket Connection ...** from the context menu.
5. Click the **Browse ...** button on the DataSocket Connection dialog and then select **Browse Measurement data ...** from the secondary menu.
6. Locate and select the Ch0InputValue tag in the directory tree beneath the OPC server. Click **OK** to close the dialog.



7. The Connection Type should be set to **Subscribe** on the DataSocket Connection dialog since the application will be reading this tag. Click the **Attach** button to complete the DataSocket configuration.



- Repeat steps 4 through 7 to attach the button control to the OPC server's DigitalOutput0 tag. Set the Connection Type to **Publish** since the application will be writing this tag. (**Publish and subscribe** is also acceptable and would allow the button state to reflect changes made to the digital output by another application.)

9. The application is now complete. Test it by clicking the white Run arrow icon. The meter indicator will display the voltage on Input 0. Clicking the button will toggle the state of Digital Output 0.

