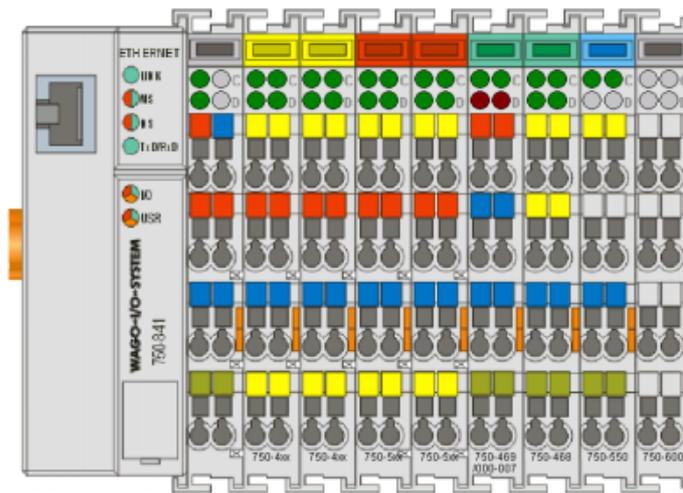


WAGO I/O SYSTEM 750

Configuring WAGO Ethernet with National Instruments LabVIEW via CoDeSys OPC Server



Application note

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Version 1.0.0

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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

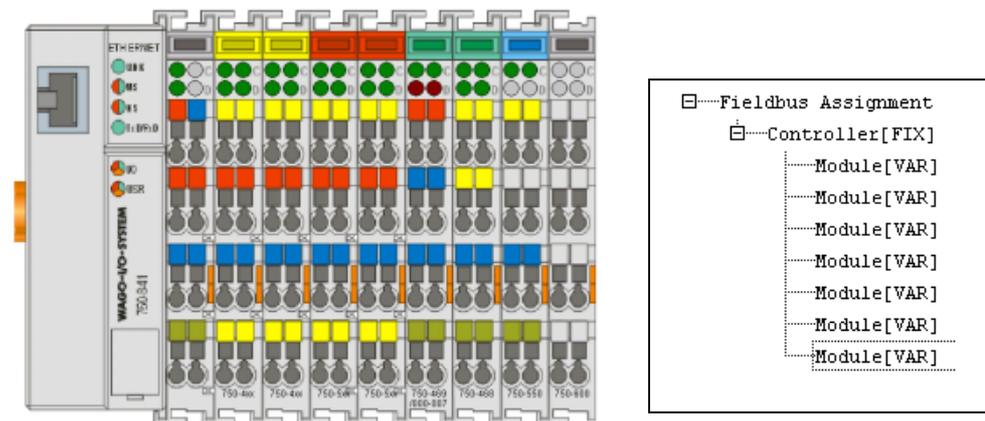
The purpose of this document is to provide step-by-step procedures for configuring National Instruments' LabVIEW for communications with WAGO fieldbus controllers.

The procedures that follow illustrate how to access variables of a PLC program from discrete controls and indicators in a LabVIEW application.

The PLC variables are published by the CoDeSys OPC Server, the advantage of using CoDeSys OPC Server instead of other OPC Server is the simple configuration. The steps are:

- 1.) Create a CoDeSys project, with variables.
- 2.) Change the setting for the symbol file to export the variables.
- 3.) Open the OPC configurator and select the communication channel used for the download of the project.
- 4.) Start any OPC client to browse to the list of available OPC items.

The example applies to the WAGO Ethernet controller 750-841, but will work for all WAGO controllers that support CoDeSys 2.3.3 or higher.



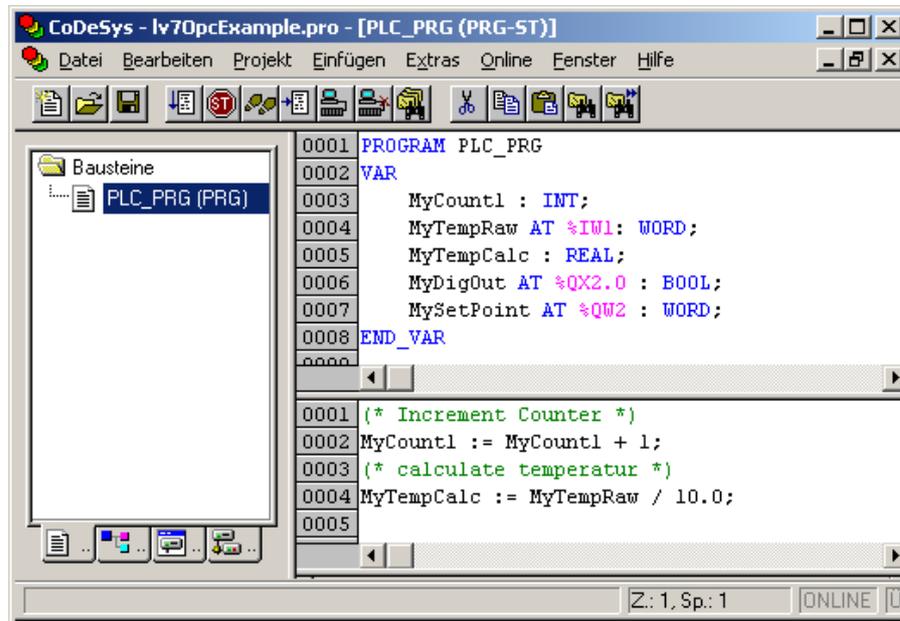
For the 750-841 keep in mind to modify the hardware configuration to enable write access to physical output for the PLC.

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

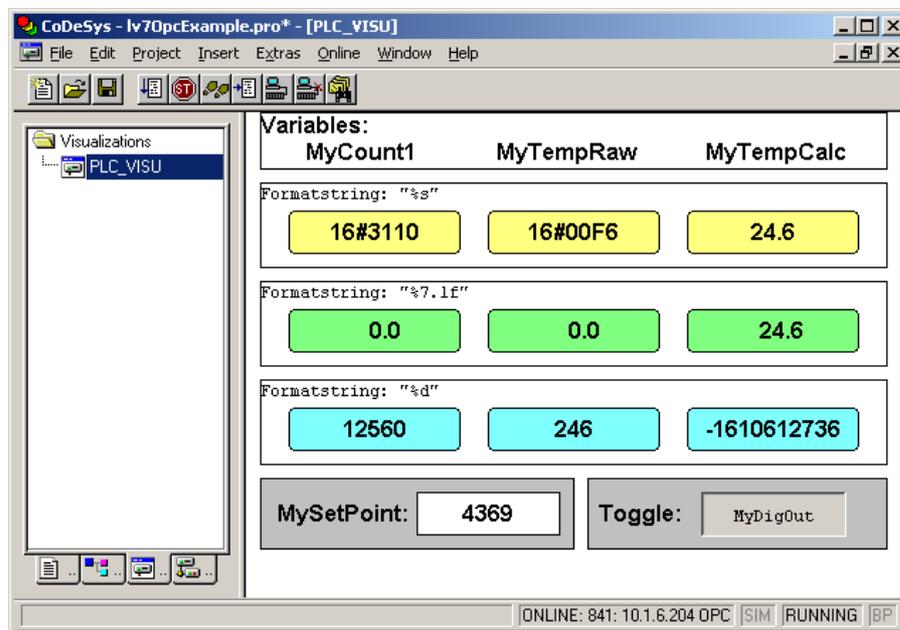
- Microsofts Operatingsystem: windows 2000
- National Instruments LabVIEW 7
- CoDeSys 2.3.3
- WAGO ethernet controller 750-841

3 The CoDeSys project “lv7OpcExample.pro”

The PLC_PRG only defines some variables, increment a counter and calculate a new value, that’s all.



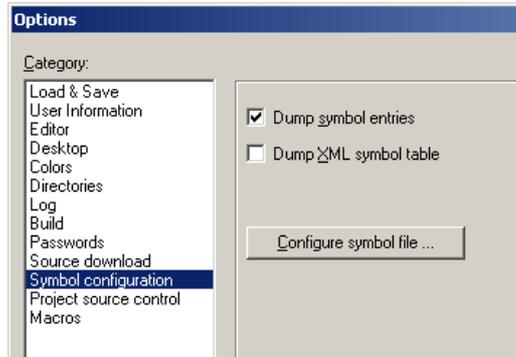
The project also offer a small visualization that displays the actual values and the changes made by the OPC-client applications (LabVIEW).



The visualization shows the values in different formats and offers an input field to edit the variable “MySetPoint” and button that toggles the “My-DigOut” variable who represents the first digital output.

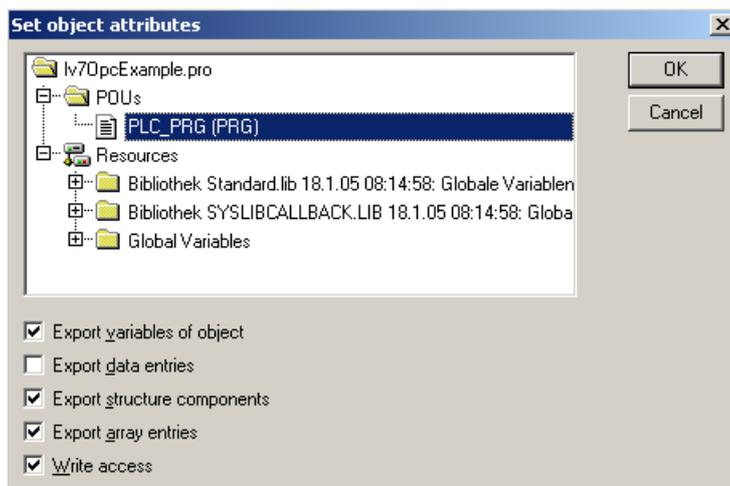
3.1 The symbol configuration

Open the “Options” dialog with the menu prompt “project” and click “Options”.

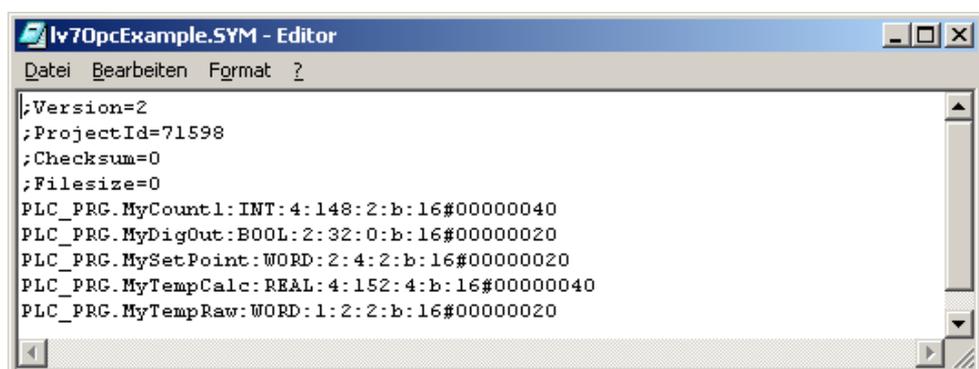


Mark the checkbox for “Dump symbol entries”. From now on the compiler will also create a “.SYM” files that keeps information of variables who are needed to be read over the 3S gateway.

By default the symbol file has no entries, so you have to configure witch variables should be published later, if the OPC server processes this file.



In this example all the variables, structures and array elements of the PLC_PRG are exported.

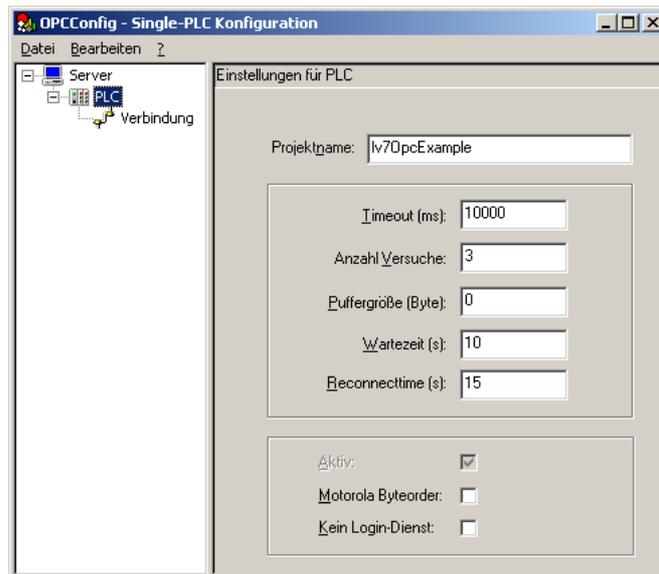


Above you see the corresponded symbol file in notepad.

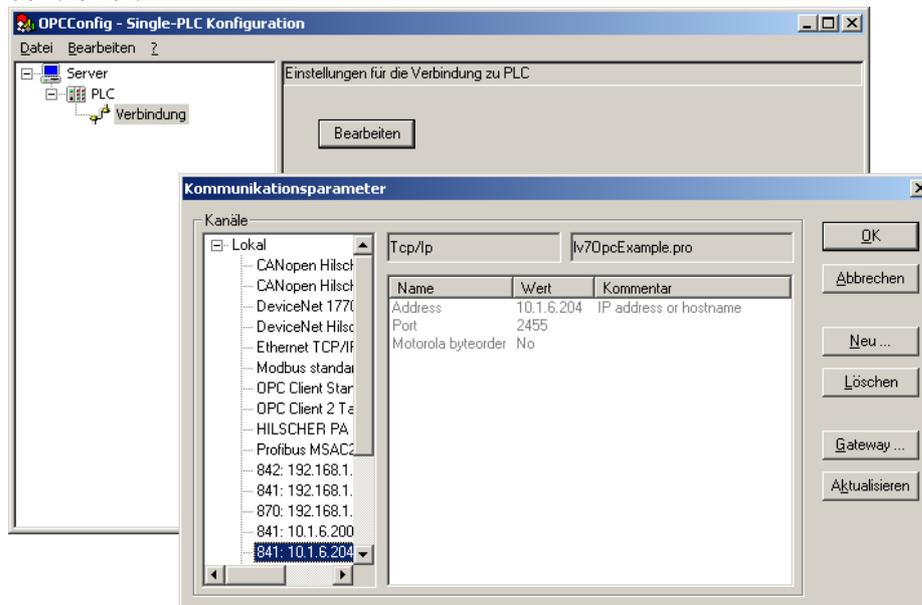
4 The OPC configuration

Only two information are enough to compiled the OPC configuration. Start the CoDeSys OPC configuration tool with Start -> Programs -> WAGO Software -> CoDeSys for Automation Alliance -> Communication -> CoDeSys OPC configuration.

Mark the PLC entry in the TreeView and enter a project name, typical the name of the CoDeSys project.



Mark the “connection” entry of the TreeView, press the “Edit” Button and select the communication channel you used to download the project into the controller.



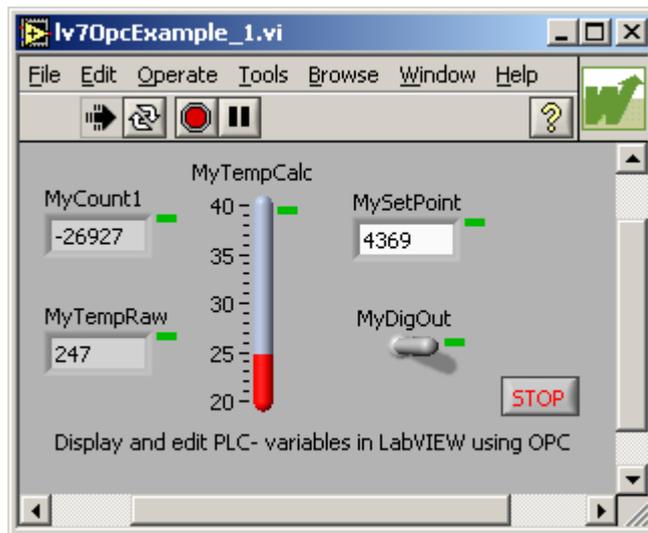
Press OK and save the configuration. That’s all.

5 The LabVIEW applications

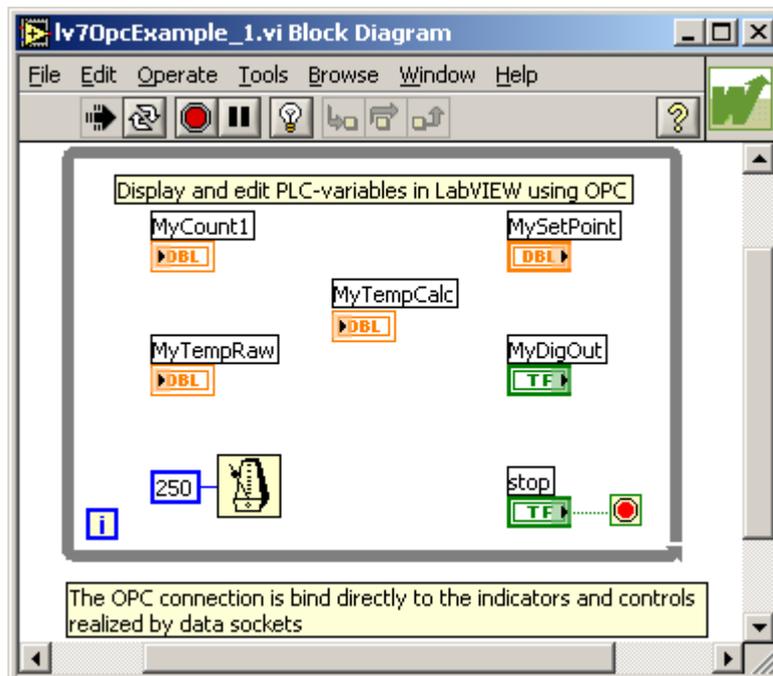
Both following examples using the LabVIEW's "DataSocket" functionality.

5.1 "lv7OpcExample_1"

The example use the option to bind an indicator or control directly to an OPC data source.



The state of the OPC-client connection is monitored by a small rectangle shown on the right side above the indicator. The color green stands for proper operation and red for a bad quality



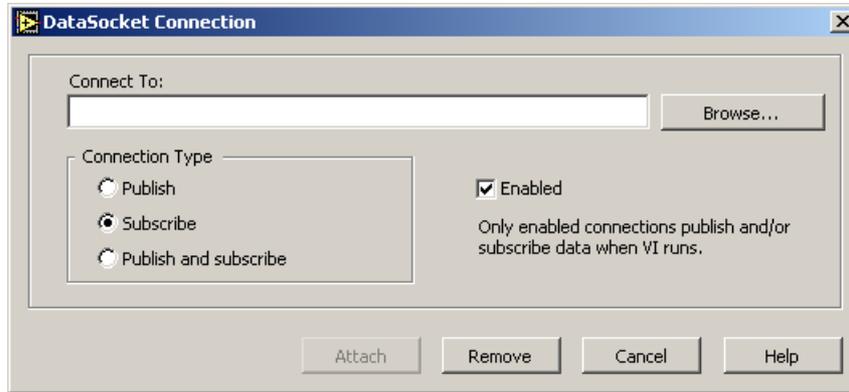
There is no hint inside the block diagram for a bound "DataSocket" object.

5.1.1 Bind a indicator object

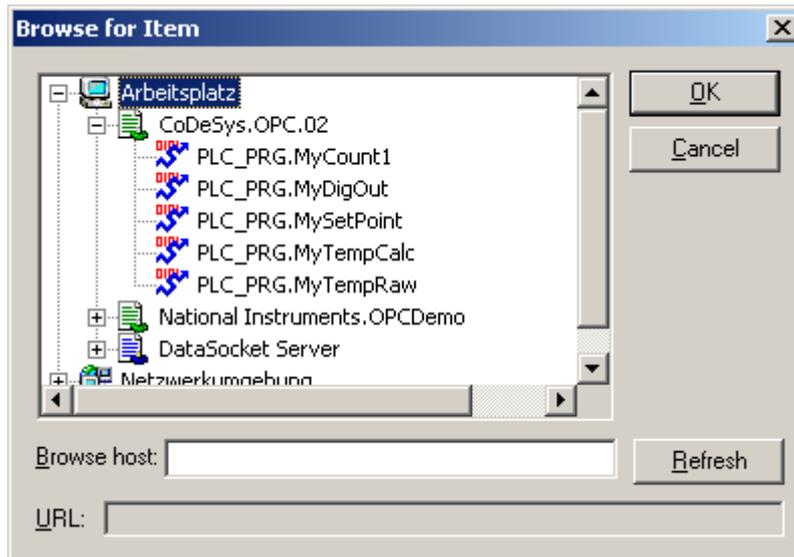
Insert a indicator object on the front panel.

Open the background menu by a click the right mouse button.

Select “Data Operation” followed by “DataSocket Connection ...” to display the following dialog.



Press the “Browse...” button and click on “Browse Measurement data...” and the following dialog should be displayed.

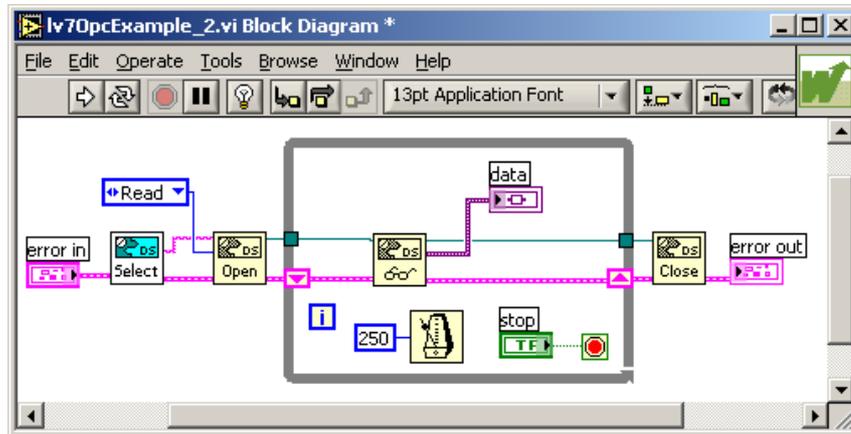


Select the variable you want to monitor and press OK and the “Attach”.

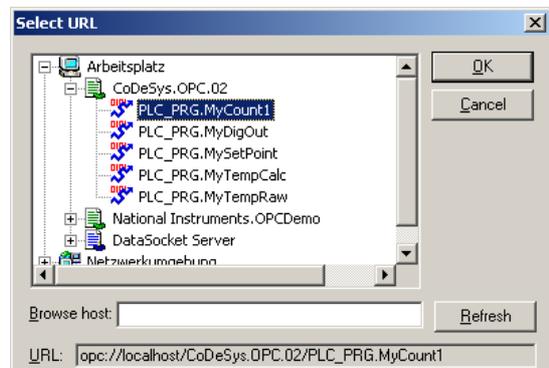
The last step is run the vi.

5.2 “lv7OpcExample_2”

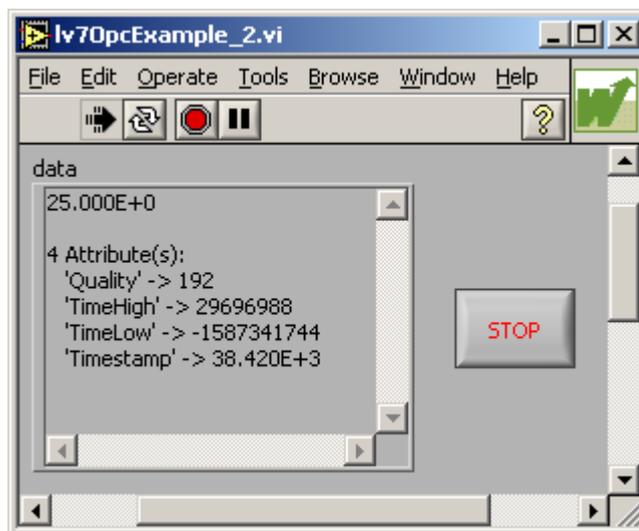
This example shows a different way to create an OPC client connection at run-time.



The select-vi opens the known dialog, where you can select the OPC-Item that should be displayed.



Below you see the front panel of the example where the data are displayed as a raw variant



You can convert the value into nearly all other datatypes.



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