Sample ActiveX Control for the ELS Family

This sample in Visual Basic uses the OPC SNMP Server from SIMATIC NET to monitor a switch of the ELS family (ELS TP40M only).

This description is divided into the following sections:

- Settings for the ActiveX Control on the OPC Server
- Working with the ActiveX Control
- Description of the ActiveX Control Program
- Requirements for Programming the Control in Visual Basic

Settings for the ActiveX Control on the OPC Server

On the OPC Server, a connection to an ELS using the SNMP protocol must be configured.

Name
You can select any suitable name and the name configured here must later be set as the ConnectionName in the ELS ActiveX Control.

IP address
Here, you enter the IP address of the ELS.

Device profile
Here, select the profile "Profil_ELS_TP40_V10.txt".

In all other input boxes, you can leave the default entries.

Working with the ActiveX Control

Registering the ActiveX Control

Before you can use the control, you must include it in your project (for example in WinCC).

In WinCC:
In the *Object Palette*, select the *Controls* tab.
Right-click on the *Controls* tab.
Select *Add/Remove*.
Click the *Register OCX ...* button.
Now browse to the ActiveX Control (*.ocx), select it and *open* it.
Put a check mark beside the inserted control in the list.
Close the *Select OCX Controls* window with the *OK* button.

In Visual Basic:
In the *Project* menu, select *Components*.
Then select the *Controls* tab and click the *Browse* button.
Now browse to the ActiveX Control (*.ocx), select it and *open* it.
Confirm the *Components* window with the *OK* button.
Then select the *Controls* tab and click the *Browse* button.
Now browse to the ActiveX Control (*.ocx), select it and *open* it.
Confirm the *Components* window with the *OK* button.

In Design Mode

in design mode, only the gray control mode icon is displayed. The size of this icon is set automatically.

The properties of the control must now be set. The ConnectionName must be specified since this represents the connection to the ELS. The connection is configured in the system configuration in NCM. The name of the connection specified there is now entered here as ConnectionName. The UpdateTimerInterval does not necessarily need to be specified. It has the default value (1000 ms).

Properties of the Control:

Name:	Description:	Default:
ConnectionName	The connection name represents the connection to the OPC SNMP Core Server. It also matches the name in the system configuration of the OPC SNMP server in NCM.	
UpdateTimerInterval	This is the update time of the control. How often the displayed data is polled.	1000 ms

In Run Time

In run time, the control operates in two different modes. The Control mode and the Config mode.

Control Mode:

In the Control mode, only two icons are displayed. These icons show the state of the ELS.

	No connection to the ELS. When, for example, there is no network connection to the ELS. Or when the OPC SNMP Core Server is not running. Or the control was incorrectly configured.
	Connection to the ELS.

If the Control Icon is green, when you click on the icon, you change to the Config mode. When the icon is gray, this does not work, since there is no connection to the ELS

Config Mode:

LED Fields:
The LED fields Power and Ports are polled at the selected timer interval *UpdateTimerInterval*.
Meaning of the LEDs.

Power Field:

Power LED L1 lit green, in other words, the power supply is applied.

Ports Field:
The port LEDs indicate the operating states of the individual ports of the ELS. If the Port LED is not lit, there is no valid connection at the port (for example, station turned off or cable not connected). If the Port LED is lit green, there is a valid connection.

System Field:
Here, the four SNMP objects sysName, sysLocation, sysContact, and sysDescription are displayed. When you change to the Config mode, these four values are fetched once from the device. Apart from the sysDescription, these values can be modified.

Trap Field:
Here, the trap receiver is displayed with the Index 2 of the ELS. The Enable check box indicates whether a trap was sent for all events. These values can be modified.

Get Current Values:
This button updates the values in the system field and the trap field.

Set New Values:
This button writes all values to the ELS.

Close:
This button exits the Config mode.

Description of the ActiveX Control Program

The control uses asynchronous communication. In the Control mode, only 1 item (Linkstatus) is queried. There is an immediate reaction to a change in the status of the link to the ELS. If there is no longer a link to the ELS, the gray icon is displayed immediately. As long as there is a link, the green icon is displayed. If there is no link to the ELS, the control attempts cyclically to re-establish the link to the ELS over the OPC SNMP server.
If the Config mode is activated by clicking the green icon, all items required for reading and writing are logged on. If you exit the Config mode again, the additional items are logged off again. If the link to the ELS is lost in the Config mode, the Config mode is closes immediately and the gray icon is displayed.

Requirements for Programming the Control in Visual Basic

To modify the example with the aid of Visual Basic, the following requirements must be met for Visual Basic:

Loading the Siemens OPC DAAutomation DLL:

To create a control that uses the SOPCDAAuto.dll functions for accessing the OPC Server, this DLL must be loaded in the development environment of Visual Basic.
It is assumed that the OPC Server of SIMATIC NET is installed on the PC.

Select *View – Object Browser*
Right-click on <All Libraries> - *References*
Then navigate to the DLL with Browse. This is located under Dr:\Programs\Common Files\Siemens\OPC\SOPCDAAuto.dll. Select and open this file.
Now place a check mark beside Siemens OPC DAAutomation 2.0.

Properties of the Control

The Public property of a UserControl must always be set to TRUE to compile the control.