

Sample ActiveX Control for the OSM/ESM Family

This example in Visual Basic uses the OPC SNMP Server of SIMATIC NET to monitor a switch of the OSM/ESM family.

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 OSM/ESM using the SNMP protocol must be configured.

The screenshot shows a dialog box titled "Edit nodes" with a close button (X) in the top right corner. The dialog contains several input fields and a checkbox:

- Name:** Text box containing "Test_OSM_1".
- IP address:** Text box containing "192 . 168 . 20 . 10".
- Device profile:** Dropdown menu showing "Profil_OSM_V10.txt" and a "Create Profile..." button to its right.
- Community:** Dropdown menu showing "private".
- Timeout:** Text box containing "9000" with "ms" to its right.
- Optimization of SNMP access:** A checked checkbox.
- sysContact:** Empty text box.
- sysLocation:** Empty text box.
- sysName:** Empty text box.
- Comment:** Text box containing "Configuration of SNMP device".

At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

Name

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

IP address

Here, you enter the IP address of the OSM/ESM.

Device profile

Here, select the profile "Profil_OSM_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.

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 OSM/ESM. 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 three icons are displayed. These icons show the state of the OSM/ESM.

	No connection to the ESM/OSM. When, for example, there is no network connection to the OSM. Or when the OPC SNMP Core Server is not running. Or the control was incorrectly configured.
	Connection to the OSM/ESM and there is no error on the OSM/ESM.
	Connection to the OSM and there is an error on the OSM/ESM.

When you click on the green or red control icon, you change to the Config mode. With the gray icon, this does not work, since there is no connection to the OSM

Config Mode:

LED Fields:

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

Status Field:

Fault

Status	Meaning
Lit red	The OSM/ESM has detected an error.
Not lit	No error detected by the OSM/ESM.

Stby – Standby

Status	Meaning
Lit green	The standby function is active.
Not lit	The standby function is deactivated.

RM – Redundancy Manager

Status	Meaning
Lit green	The OSM/ESM is operating in the redundancy manager mode.
Not lit	The OSM/ESM is not in the redundancy manager mode.

Power Field:

Power LED L1 or L2 lit green, in other words, power supply 1 or 2 (line 1 or line 2) applied.
 Power LED L1 or L2 not lit, in other words, power supply 1 or 2 (line 1 or line 2) less than 14 V.

Ports Field:

The port LEDs indicate the operating states of the individual ports of the OSM/ESM. 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 10 of the OSM. The Enable check box indicates whether this address is activated. 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 OSM.

Close:

This button exits the Config mode.

When there is change from the Control mode to the Config mode and the control recognizes that a miniswitch is involved, this is displayed as follows.

Status	Power	Ports
<input type="radio"/> Fault	<input checked="" type="radio"/> L1 <input type="radio"/> L2	<input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4

System

sysName: OSM MiniSwitch

sysLocation: System 4

sysContact: Mr. Krueger

sysDescription: ESM TP40

Trap

IP Address: 192.168.20.101 Enable

Get Current Values Set New Values Close

Only four instead of eight ports are displayed. The Stby LED is not displayed because the miniswitch does not support this function. The control makes its decision based on the SNMP object ifNumbers.

Description of the ActiveX Control Program

The control uses asynchronous communication. In the Control mode, only 2 items (Linksstatus, Faultstatus) are queried. There is an immediate reaction to a change in the status of the link to the OSM/ESM. If there is no longer a link to the OSM/ESM, the gray icon is displayed immediately. As long as there is a link, the red or green icon is displayed. The fault status of the OSM/ESM is polled by a timer, whose interval can be set in the Properties of the control. Polling the fault status also establishes whether or not the link to the OPC server is still active. If this link breaks down, the control indicates this with the gray icon. The control then attempts cyclically to re-establish the link to the OSM/ESM over the OPC SNMP server.

If the Config mode is activated by clicking the green or red 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 OSM/ESM is lost in the Config mode, the Config mode is closed 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.