

COPC DLL : Get start help

Table of content

1. Introduction.....	1
2. Requirements	1
2.1 Operating System.....	1
2.2 OPC Server	1
2.3 Programming IDE.....	2
3. Registering COPC DLL.....	2
4. Get start.....	2
4.1 Add reference to COPC DLL	2
4.2 Create COPC DLL instance and connect to OPC server.....	4
4.3 Display OPC tag value.....	4
4.4 Write value to OPC tag.....	5
4.5 Disconnect from OPC server.....	5
C# code	6
VB6 code	8
VB.Net code.....	9
5. Connect to OPC Server on another PC via Ethernet.....	10
6. More Information.....	11

1. Introduction

COPC DLL used for SCADA creation and development. You can create SCADA system (Graphic monitoring & control, Trending, Alarm, and more..) within your favorite programming IDE such as Visual Basic 6.0, Visual Studio.Net (VB.Net, C#), and VBA (MS Excel, Word, ...).

COPC DLL is a light-weight activeX for SCADA developer. COPC DLL is appropriate for developer who like flexible of size configurable within large of OPC tags. COPC DLL use small of memory. Then you can create SCADA system for large of tags within hi-speed of operation.

2. Requirements

2.1 Operating System

COPC DLL runs on windows XP, 2000, 2003, Vista.

2.2 OPC Server

Please install any OPC Server on the operating system for testing purpose.

2.3 Programming IDE

You could have programming IDE such as Visual Basic, Visual Basic.Net (2002/2003/2005/2005 Express/ 2008/2008 Express), Visual C# (2002/2003/2005/2005 Express/ 2008/2008 Express) or VBA (MS Excel, ...) on the operation system.

3. Registering COPC DLL

Before using COPC DLL, you have to copy “copc.dll” into system directory such C:\Windows\system32. After copy and paste, you have to register copc.dll to system using the following step.

1. Go to Start > Run
2. Chang directory to system directory, for example, C:\Windows\system32.
3. Use ‘regsvr32’ command to register COPC DLL

```
regsvr32 copc.dll
```

Press enter.

Close command prompt.

4. Get start

This example shows how to use COPC DLL on C#. For VB and VB.Net, please see the example code.

1. Add reference to COPC DLL
2. Create COPC DLL instance and connect to OPC server
3. Display OPC tag value
4. Write value to OPC tag
5. Disconnect from OPC server

4.1 Add reference to COPC DLL

Create windows application project on Visual C# (Express/Standard/Enterprise). Give project name as ‘COPCDLLTest’. Place 3 labels, 1 button and 1 textbox on the form.

In solution explorer, right-click on Reference, select Add Reference.. from context menu.

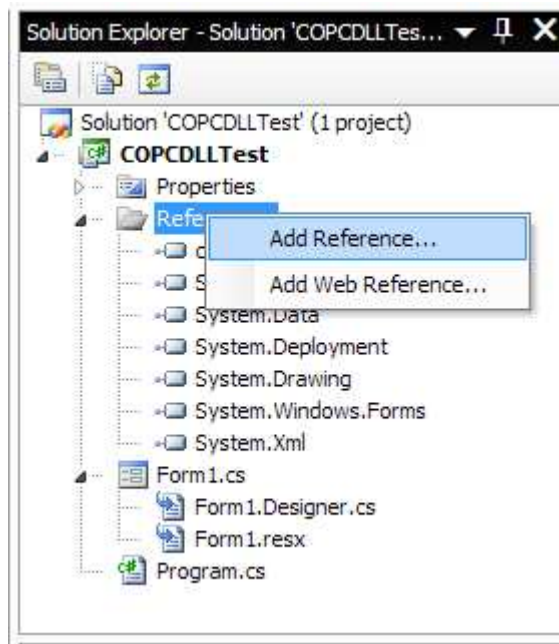


Figure 1 Add reference to COPC DLL
Choose 'COM' tab. And select 'copcUnlimited' from list, and then click OK.

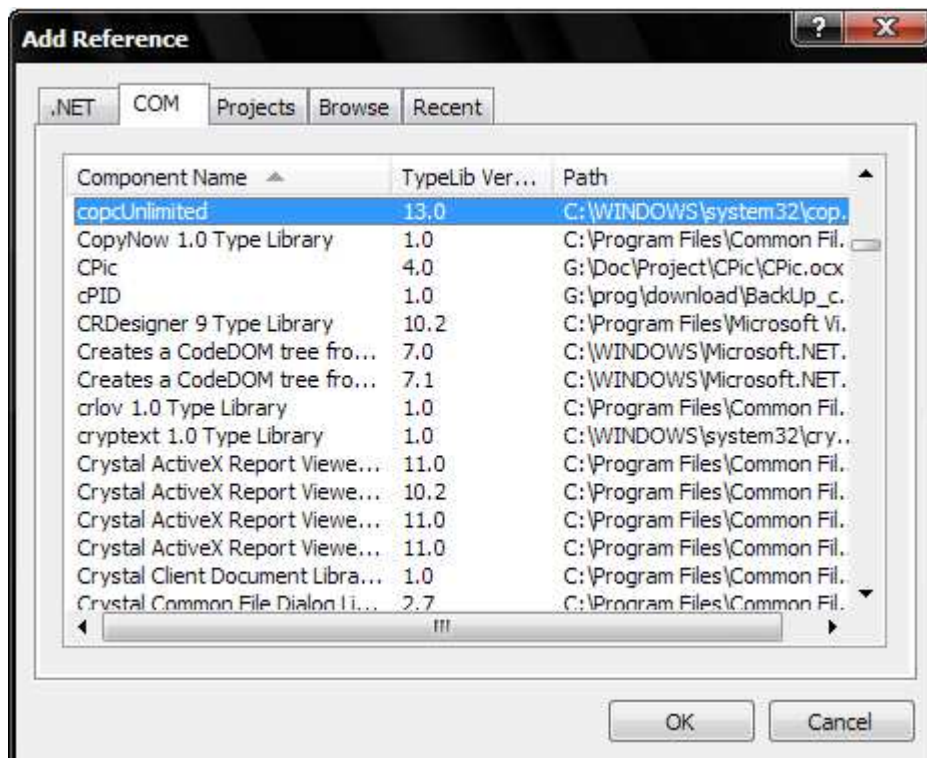


Figure 2 Select 'copcUnlimited'

Add the following header

```
using copcUnlimited;
```

4.2 Create COPC DLL instance and connect to OPC server

Declare copcl1.

```
namespace COPCDLLTest

public partial class Form1 : Form
{
    copcClass copcl1;
```

Create COPC DLL instance and then specify OPC Server, OPC tag and update rate.
In this Tutorial, there is KEPServerEx V4 used as tested OPC server.

```
public Form1()
{
    InitializeComponent();
    copcl1 = new copcClass();
    copcl1.datChange += new __copcClass_datChangeEventHandler(copcl1_datChange);

    //Specify OPC Server
    copcl1.svrName = "KEPware.KEPServerEx.V4";

    //OPC tag amount. You can specify amonut of OPC tag used.
    copcl1.tagAmount = 3;

    //1st OPC tag name
    copcl1.setItm(0, "Channel_0_User_Defined.Random.Random1");

    //2nd OPC tag name
    copcl1.setItm(1, "Channel_0_User_Defined.Random.Random2");

    //3thd OPC tag name
    copcl1.setItm(2, "Channel_1.Device_1.Tag_1");

    //Update rate in ms
    copcl1.UpdateRate = 100;

    //connect to OPC Server
    try
    {
        copcl1.connectng();
    }
    catch (Exception er)
    {
        MessageBox.Show(er.Message);
    }
}
```

4.3 Display OPC tag value.

You can use 'tgVal(int refNo)' to get OPC tag value.

Wher

refNo = reference number of OPC tag you have specify above.

```
void copcl_datChange(int tagIndex)
{
    //You can use Case to specify
    //which OPC tags value was changed like example below.

    switch (tagIndex)
    {
        case 0:
            this.label1.Text = copcl.tgVal(0).ToString();
            break;
        case 1:
            this.label2.Text = copcl.tgVal(1).ToString();
            break;
        case 2:
            this.label3.Text = copcl.tgVal(2).ToString();
            break;
    }
}
```

4.4 Write value to OPC tag.

You can use '*opcWrt(int refNo, object Value)*' to write value to OPC tag.

Value = Value send to OPC tag

```
private void button1_Click(object sender, EventArgs e)
{
    try
    {
        copcl.opcWrt(2, double.Parse(textBox1.Text));
    }
    catch (Exception er)
    {
        MessageBox.Show(er.Message);
    }
}
```

4.5 Disconnect from OPC server.

You could disconnect form OPC server every time application is closed by using

disconnect()

```
private void Form1_FormClosing(object sender, FormClosingEventArgs e)
{
```

```

        try
        {
            copcl.disconnect();
        }
        catch (Exception er)
        {
            MessageBox.Show(er.Message);
        }
    }
}

```

Total code show below

C# code

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;
using cpcUnlimited;

namespace COPCDLLTest
{
    public partial class Form1 : Form
    {
        copcClass copcl;

        public Form1()
        {
            InitializeComponent();

            copcl = new copcClass();

            copcl.datChange += new __copcClass_datChangeEventHandler(copcl_datChange);

            //Specify OPC Server
            copcl.svrName = "KEPware.KEPServerEx.V4";

            //OPC tag amount
            copcl.tagAmount = 3;

            //1st, 2nd, 3rd OPC tag name
            copcl.setItm(0, "Channel_0_User_Defined.Random.Random1");
            copcl.setItm(1, "Channel_0_User_Defined.Random.Random2");
            copcl.setItm(2, "Channel_1.Device_1.Tag_1");

            //Update rate in ms
            copcl.UpdateRate = 100;
        }
    }
}

```

```

        //connect to OPC Server
        try
        {
            copcl.connectng();
        }
        catch (Exception er)
        {
            MessageBox.Show(er.Message);
        }
    }

    void copcl_datChange(int tagIndex)
    {
        switch (tagIndex)
        {
            case 0:
                this.label1.Text = copcl.tgVal(0).ToString();
                break;
            case 1:
                this.label2.Text = copcl.tgVal(1).ToString();
                break;
            case 2:
                this.label3.Text = copcl.tgVal(2).ToString();
                break;
        }
    }

    private void Form1_FormClosing(object sender, FormClosingEventArgs e)
    {
        try
        {
            copcl.disconnect();
        }
        catch (Exception er)
        {
            MessageBox.Show(er.Message);
        }
    }

    private void button1_Click(object sender, EventArgs e)
    {
        try
        {
            copcl.opcWrt(2, double.Parse(textBox1.Text));
        }
        catch (Exception er)
        {
            MessageBox.Show(er.Message);
        }
    }

```

```
}  
}
```

VB6 code

Before use COPC DLL on VB6, you have to add reference COPC DLL to VB6 IDE. In VB6 IDE, select *Project > Reference*. Select 'cpcUnlimited' from list. And then click OK.

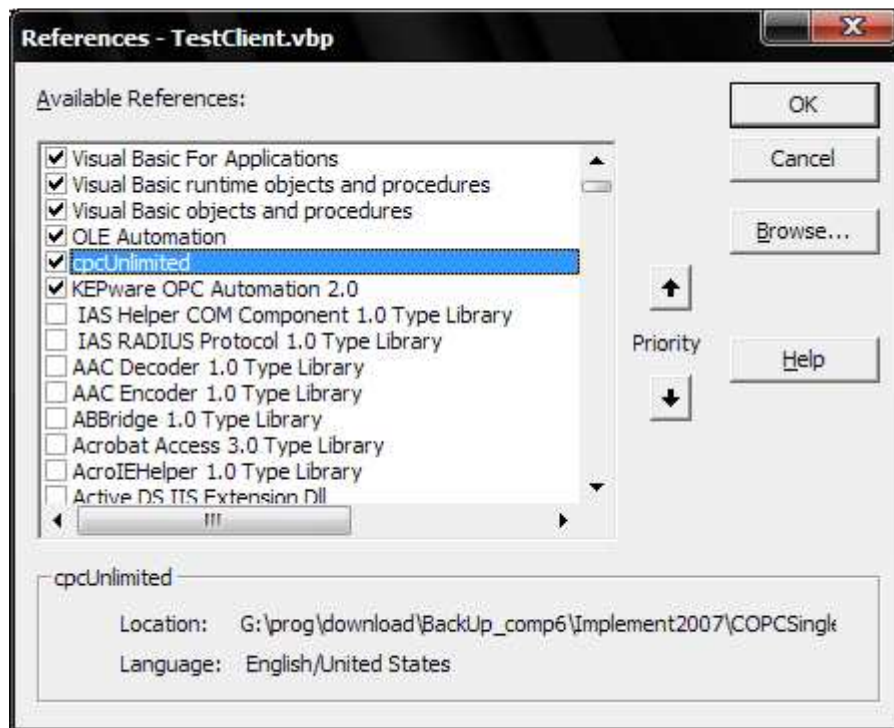


Figure 3

```
Dim WithEvents copc1 As copcClass
```

```
Private Sub Form_Load()
```

```
    Set copc1 = New copcClass  
    copc1.tagAmount = 2  
    copc1.svrName = "ICONICS.Simulator.1"  
    copc1.setItm 0, "SimulatePLC.OUTPUTS.BIT1"  
    copc1.setItm 1, "SimulatePLC.OUTPUTS.BIT2"  
    copc1.UpdateRate = 1000
```

```
    Command2.Enabled = False  
    Command3.Enabled = False
```


End Sub

Private Sub Command2_Click() 'Use to write value to OPC tag

 'Write 1 to the first OPC tag defying above in *Form_Load*

 copc1.opcWrt 0, 1

End Sub

Private Sub Command4_Click() 'Use to write value to OPC tag

 'Write 0 to the first OPC tag defying above in *Form_Load*

 copc1.opcWrt 0, 0

End Sub

Private Sub copc1_datChange(ByVal tagIndex As Long)

 'Display OPC tag value of first OPC tag

 Text1.Text = copc1.tgVal(0)

End Sub

Private Sub Form_QueryUnload(Cancel As Integer, UnloadMode As Integer)

 Call disconnect

End Sub

Private Sub Form_Terminate()

 Call disconnect

End Sub

Sub disconnect()

 On Error Resume Next

 copc1.disconnect

 Set copc1 = Nothing

End Sub

VB.Net code

`Imports cpcUnlimited`

```
Public Class Form1
```

```
    Dim WithEvents copc1 As copcClass  
    Const nb = 2
```

```
Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles MyBase.Load
```

```
    copc1 = New copcClass  
  
    copc1.svrName = "ICONICS.Simulator.1"  
    copc1.nodeName = ""  
    copc1.tagAmount = 2  
    copc1.UpdateRate = 1000  
  
    copc1.setItm(0, "SimulatePLC.OUTPUTS.FLOAT")  
    copc1.setItm(1, "SimulatePLC.Sine")  
    copc1.connectng()
```

```
End Sub
```

```
Private Sub copc1_datChange(ByRef tagIndex As Integer) Handles copc1.datChange
```

```
    Label1.Text = copc1.tgVal(0)  
    Label2.Text = copc1.tgVal(1)
```

```
End Sub
```

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles Button1.Click
```

```
    copc1.opcWrt(0, Val(TextBox1.Text))
```

```
End Sub
```

```
Private Sub Form1_FormClosing(ByVal sender As Object, ByVal e As  
System.Windows.Forms.FormClosingEventArgs) Handles Me.FormClosing
```

```
    copc1.disconnect()  
    copc1 = Nothing  
End Sub
```

```
End Class
```

5. Connect to OPC Server on another PC via Ethernet.

You can use *nodeName* Property to specify IP address or computer name on the network. Please consider the following code

```
copc1.svrName = "KEPware.KEPServerEx.V4"; //Specify OPC Server
```

```
copcl.nodeName = "192.168.1.2";//Specify OPC Server IP
```

or

```
copcl.svrName = "KEPware.KEPServerEx.V4";//Specify OPC Server  
copcl.nodeName = "sps";//Specify PC name
```

Note:

You have to configure DCOM in both OPC Server side and Client side before connecting to OPC server via Ethernet or Local Area Network. For more information please see

- [How to setup DCOM for Remote OPC Server](#) (from KEPWare)
- [OPC & DCOM Tutorial VDO](#) from google VDO

6. More Information

Contact : info@eda.co.th , technical@eda.co.th
www.eda.co.th

EDA Instruments & Systems Co., Ltd.
Watcharapol Road, Taraeng Bangkhen, Bangkok Thailand 10220
Tel. +66(0)2 9058181 Fax +66(0)2 9058188