

Option Explicit

```
Private m_addressFactory As PlcAddressFactory
Private m_addressHelper As PlcAddressHelper
Private m_arrayFactory As PlcArrayFactory
Private m_deviceFactory As SimaticDeviceFactory
Private m_endpointFactory As IPDeviceEndPointFactory
Private m_operandHelper As PlcOperandHelper
Private m_valueFactory As PlcValueFactory

Public Property Get PlcAddresses() As PlcAddressHelper
    If (m_addressHelper Is Nothing) Then
        Set m_addressHelper = New PlcAddressHelper
    End If

    Set PlcAddresses = m_addressHelper
End Property

Public Property Get PlcOperands() As PlcOperandHelper
    If (m_operandHelper Is Nothing) Then
        Set m_operandHelper = New PlcOperandHelper
    End If

    Set PlcOperands = m_operandHelper
End Property

Public Function PlcOperand_DataBlock(ByVal number As Long) As PlcOperand
    If (m_operandHelper Is Nothing) Then
        Set m_operandHelper = New PlcOperandHelper
    End If

    Set PlcOperand_DataBlock = m_operandHelper.DataBlock(number)
End Function

Public Function PlcOperand_Of(ByVal operandType As PlcOperandType) As PlcOperand
    If (m_operandHelper Is Nothing) Then
        Set m_operandHelper = New PlcOperandHelper
    End If

    Set PlcOperand_Of = m_operandHelper.Of(operandType)
End Function

Public Function New_SimaticDevice( _
    ByRef endPoint As PlcDeviceEndPoint, _
    Optional ByVal deviceType As SimaticDeviceType = SimaticDeviceType_S7300_400) As S
imaticDevice

    If (m_deviceFactory Is Nothing) Then
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        Set m_deviceFactory = New SimaticDeviceFactory
    End If

    Set New_SimaticDevice = m_deviceFactory.Create(endPoint, deviceType)
End Function

Public Function New_SimaticIPDevice( _
    ByRef address As String, _
    Optional ByVal rack As Long = 0, _
    Optional ByVal slot As Long = 2, _
    Optional ByVal deviceType As SimaticDeviceType = SimaticDeviceType_S7300_400) As S
imaticDevice

    Set New_SimaticIPDevice = New_SimaticDevice( _
        New_IPDeviceEndPoint(address, rack, slot), deviceType)
End Function

Public Function New_IPDeviceEndPoint( _
    ByRef address As String, _
    Optional ByVal rack As Long = 0, _
    Optional ByVal slot As Long = 2) As IPDeviceEndPoint

    If (m_addressFactory Is Nothing) Then
        Set m_endpointFactory = New IPDeviceEndPointFactory
    End If

    Set New_IPDeviceEndPoint = m_endpointFactory.Create(address, rack, slot)
End Function

Public Function New_PlcAddress( _
    ByRef operand As PlcOperand, _
    ByVal rawType As PlcRawType, _
    ByVal byteNumber As Long, _
    Optional bitNumber As Long = -1)

    If (m_addressFactory Is Nothing) Then
        Set m_addressFactory = New PlcAddressFactory
    End If

    Set New_PlcAddress = m_addressFactory.Create(operand, rawType, byteNumber, bitNumber)
End Function

Public Function New_PlcBoolean( _
    ByRef address As String, _
    Optional ByVal value As Boolean = False) As PlcBoolean

    If (m_valueFactory Is Nothing) Then
        Set m_valueFactory = New PlcValueFactory
    End If

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Set New_PlcBoolean = m_valueFactory.CreateBoolean(address, value)
End Function
```

```
Public Function New_PlcBooleanArray( _
    ByRef address As String, _
    ByVal length As Long) As PlcBooleanArray

    If (m_arrayFactory Is Nothing) Then
        Set m_arrayFactory = New PlcArrayFactory
    End If

    Set New_PlcBooleanArray = m_arrayFactory.CreateBooleanArray(address, length)
End Function
```

```
Public Function New_PlcBooleanArrayUsingValues( _
    ByRef address As String, _
    ParamArray booleanValues() As Variant) As PlcBooleanArray

    If (m_arrayFactory Is Nothing) Then
        Set m_arrayFactory = New PlcArrayFactory
    End If

    Dim values() As Boolean
    ReDim values(UBound(booleanValues))

    Dim index As Long
    For index = 0 To UBound(booleanValues)
        values(index) = CBool(booleanValues(index))
    Next

    Set New_PlcBooleanArrayUsingValues = m_arrayFactory.CreateBooleanArrayUsingValues(addr
ess, values)
End Function
```

```
Public Function New_PlcByte( _
    ByRef address As String, _
    Optional ByVal value As Byte = 0) As PlcByte

    If (m_valueFactory Is Nothing) Then
        Set m_valueFactory = New PlcValueFactory
    End If

    Set New_PlcByte = m_valueFactory.CreateByte(address, value)
End Function
```

```
Public Function New_PlcByteArray( _
    ByRef address As String, _
    ByVal length As Long) As PlcByteArray

    If (m_arrayFactory Is Nothing) Then
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        Set m_arrayFactory = New PlcArrayFactory
    End If

    Set New_PlcByteArray = m_arrayFactory.CreateByteArray(address, length)
End Function

Public Function New_PlcByteArrayUsingValues( _
    ByRef address As String, _
    ParamArray byteValues() As Variant) As PlcByteArray

    If (m_arrayFactory Is Nothing) Then
        Set m_arrayFactory = New PlcArrayFactory
    End If

    Dim values() As Byte
    ReDim values(UBound(byteValues))

    Dim index As Long
    For index = 0 To UBound(byteValues)
        values(index) = CByte(byteValues(index))
    Next

    Set New_PlcByteArrayUsingValues = m_arrayFactory.CreateByteArrayUsingValues(address, v
alues)
End Function

Public Function New_PlcChar( _
    ByRef address As String, _
    Optional ByRef value As String = "") As PlcChar

    If (m_valueFactory Is Nothing) Then
        Set m_valueFactory = New PlcValueFactory
    End If

    Set New_PlcChar = m_valueFactory.CreateChar(address, value)
End Function

Public Function New_PlcCharArray( _
    ByRef address As String, _
    ByVal length As Long) As PlcCharArray

    If (m_arrayFactory Is Nothing) Then
        Set m_arrayFactory = New PlcArrayFactory
    End If

    Set New_PlcCharArray = m_arrayFactory.CreateCharArray(address, length)
End Function

Public Function New_PlcCharArrayUsingValues( _
    ByRef address As String, _

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        ParamArray stringValue() As Variant) As PlcCharArray

If (m_arrayFactory Is Nothing) Then
    Set m_arrayFactory = New PlcArrayFactory
End If

Dim values() As String
ReDim values(UBound(stringValues))

Dim index As Long
For index = 0 To UBound(stringValues)
    values(index) = CStr(stringValues(index))
Next

Set New_PlcCharArrayUsingValues = m_arrayFactory.CreateCharArrayUsingValues(address, values)
End Function

Public Function New_PlcDate( _
    ByRef address As String, _
    Optional ByRef value As Date) As PlcDate

If (m_valueFactory Is Nothing) Then
    Set m_valueFactory = New PlcValueFactory
End If

Set New_PlcDate = m_valueFactory.CreateDate(address, value)
End Function

Public Function New_PlcDateTime( _
    ByRef address As String, _
    Optional ByRef value As Date) As PlcDateTime

If (m_valueFactory Is Nothing) Then
    Set m_valueFactory = New PlcValueFactory
End If

Set New_PlcDateTime = m_valueFactory.CreateDateTime(address, value)
End Function

Public Function New_PlcDouble( _
    ByRef address As String, _
    Optional ByVal value As Double = 0) As PlcDouble

If (m_valueFactory Is Nothing) Then
    Set m_valueFactory = New PlcValueFactory
End If

Set New_PlcDouble = m_valueFactory.CreateDouble(address, value)
End Function

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Public Function New_PlcDoubleArray( _
    ByRef address As String, _
    ByVal length As Long) As PlcDoubleArray

    If (m_arrayFactory Is Nothing) Then
        Set m_arrayFactory = New PlcArrayFactory
    End If

    Set New_PlcDoubleArray = m_arrayFactory.CreateDoubleArray(address, length)
End Function

Public Function New_PlcDoubleArrayUsingValues( _
    ByRef address As String, _
    ParamArray doubleValues() As Variant) As PlcDoubleArray

    If (m_arrayFactory Is Nothing) Then
        Set m_arrayFactory = New PlcArrayFactory
    End If

    Dim values() As Double
    ReDim values(UBound(doubleValues))

    Dim index As Long
    For index = 0 To UBound(doubleValues)
        values(index) = CDbl(doubleValues(index))
    Next

    Set New_PlcDoubleArrayUsingValues = m_arrayFactory.CreateDoubleArrayUsingValues(address, values)
End Function

Public Function New_PlcInt16( _
    ByRef address As String, _
    Optional ByVal value As Integer = 0) As PlcInt16

    If (m_valueFactory Is Nothing) Then
        Set m_valueFactory = New PlcValueFactory
    End If

    Set New_PlcInt16 = m_valueFactory.CreateInt16(address, value)
End Function

Public Function New_PlcInt16Array( _
    ByRef address As String, _
    ByVal length As Long) As PlcInt16Array

    If (m_arrayFactory Is Nothing) Then
        Set m_arrayFactory = New PlcArrayFactory
    End If

    Set New_PlcInt16Array = m_arrayFactory.CreateInt16Array(address, length)

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End Function

```
Public Function New_PlCInt16ArrayUsingValues( _  
    ByRef address As String, _  
    ParamArray integerValues() As Variant) As PlcInt16Array  
  
    If (m_arrayFactory Is Nothing) Then  
        Set m_arrayFactory = New PlcArrayFactory  
    End If  
  
    Dim values() As Integer  
    ReDim values(UBound(integerValues))  
  
    Dim index As Long  
    For index = 0 To UBound(integerValues)  
        values(index) = CInt(integerValues(index))  
    Next  
  
    Set New_PlCInt16ArrayUsingValues = m_arrayFactory.CreateInt16ArrayUsingValues(address,  
    values)  
End Function
```

```
Public Function New_PlCInt32( _  
    ByRef address As String, _  
    Optional ByVal value As Long = 0) As PlcInt32  
  
    If (m_valueFactory Is Nothing) Then  
        Set m_valueFactory = New PlcValueFactory  
    End If  
  
    Set New_PlCInt32 = m_valueFactory.CreateInt32(address, value)  
End Function
```

```
Public Function New_PlCInt32Array( _  
    ByRef address As String, _  
    ByVal length As Long) As PlcInt32Array  
  
    If (m_arrayFactory Is Nothing) Then  
        Set m_arrayFactory = New PlcArrayFactory  
    End If  
  
    Set New_PlCInt32Array = m_arrayFactory.CreateInt32Array(address, length)  
End Function
```

```
Public Function New_PlCInt32ArrayUsingValues( _  
    ByRef address As String, _  
    ParamArray longValues() As Variant) As PlcInt32Array  
  
    If (m_arrayFactory Is Nothing) Then  
        Set m_arrayFactory = New PlcArrayFactory
```

```

End If

Dim values() As Long
ReDim values(UBound(longValues))

Dim index As Long
For index = 0 To UBound(longValues)
    values(index) = CLng(longValues(index))
Next

Set New_PlcInt32ArrayUsingValues = m_arrayFactory.CreateInt32ArrayUsingValues(address,
values)
End Function

Public Function New_PlcReal( _
    ByRef address As String, _
    Optional ByVal value As Single = 0) As PlcReal

If (m_valueFactory Is Nothing) Then
    Set m_valueFactory = New PlcValueFactory
End If

Set New_PlcReal = m_valueFactory.CreateReal(address, value)
End Function

Public Function New_PlcRealArray( _
    ByRef address As String, _
    ByVal length As Long) As PlcRealArray

If (m_arrayFactory Is Nothing) Then
    Set m_arrayFactory = New PlcArrayFactory
End If

Set New_PlcRealArray = m_arrayFactory.CreateRealArray(address, length)
End Function

Public Function New_PlcRealArrayUsingValues( _
    ByRef address As String, _
    ParamArray singleValues() As Variant) As PlcRealArray

If (m_arrayFactory Is Nothing) Then
    Set m_arrayFactory = New PlcArrayFactory
End If

Dim values() As Single
ReDim values(UBound(singleValues))

Dim index As Long
For index = 0 To UBound(singleValues)
    values(index) = CSng(singleValues(index))
Next

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```
Set New_PlcRealArrayUsingValues = m_arrayFactory.CreateRealArrayUsingValues(address, values)
End Function
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```
Public Function New_PlcS5Time( _
    ByRef address As String, _
    Optional ByRef value As Date) As PlcS5Time

    If (m_valueFactory Is Nothing) Then
        Set m_valueFactory = New PlcValueFactory
    End If

    Set New_PlcS5Time = m_valueFactory.CreateS5Time(address, value)
End Function
```

```
Public Function New_PlcString( _
    ByRef address As String, _
    Optional ByRef value As String = "", _
    Optional ByVal length As Long = 0) As PlcString

    If (m_valueFactory Is Nothing) Then
        Set m_valueFactory = New PlcValueFactory
    End If

    If (length = 0) Then
        length = Len(value)
    End If

    Set New_PlcString = m_valueFactory.CreateString(address, value, length)
End Function
```

```
Public Function New_PlcTime( _
    ByRef address As String, _
    Optional ByRef value As Date) As PlcTime

    If (m_valueFactory Is Nothing) Then
        Set m_valueFactory = New PlcValueFactory
    End If

    Set New_PlcTime = m_valueFactory.CreateTime(address, value)
End Function
```

```
Public Function New_PlcTimeOfDay( _
    ByRef address As String, _
    Optional ByRef value As Date) As PlcTimeOfDay

    If (m_valueFactory Is Nothing) Then
        Set m_valueFactory = New PlcValueFactory
    End If
```

```
Set New_PlcTimeOfDay = m_valueFactory.CreateTimeOfDay(address, value)
End Function
```

```
Public Function New_PlcValues( _
    ParamArray values() As Variant) As PlcValue()
```

```
Dim plcValues() As PlcValue
ReDim plcValues(UBound(values))
```

```
Dim index As Long
For index = 0 To UBound(values)
    Set plcValues(index) = values(index)
Next
```

```
New_PlcValues = plcValues
```

```
End Function
```

```
Public Function New_PlcValuesCollection( _
    ParamArray values() As Variant) As PlcValueCollection
```

```
Dim plcValues As PlcValueCollection
Set plcValues = New PlcValueCollection
```

```
Dim index As Long
For index = 0 To UBound(values)
    Call plcValues.Add(values(index))
Next
```

```
Set New_PlcValuesCollection = plcValues
```

```
End Function
```