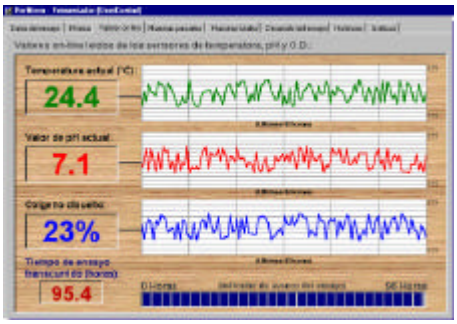
TAS-LineChart Developer's Reference

Version 8.04



CPKSoft Engineering

Process Monitoring and Industrial Automation Software

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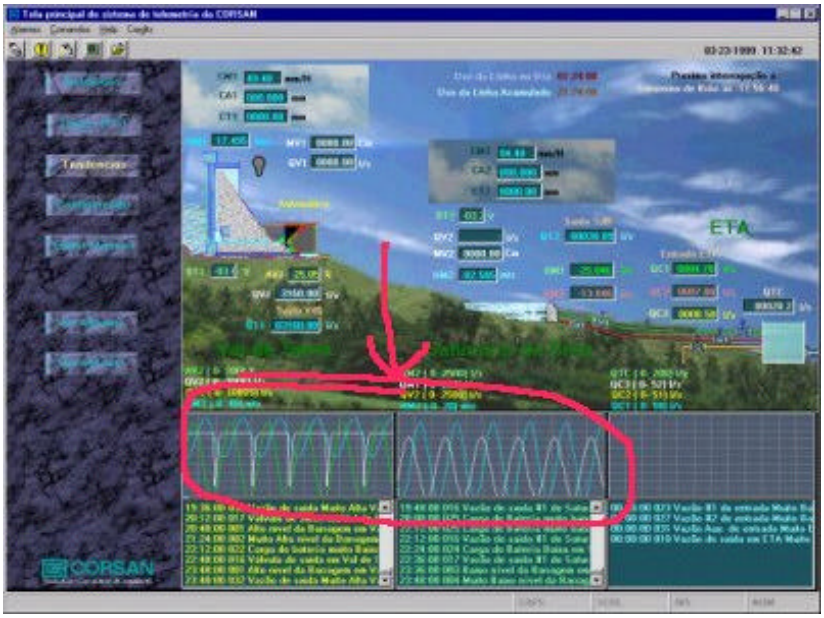
1 Overview

The LineChart control is a simple line chart object capable of showing up to 4 different pens. It is included in the TAS-HMITalk package as an alternative to the many drawing solutions available that are usually too slow when they are refreshed to show real-time buffered data. LineChart is optimized to show line charts that must give the illusion of a smooth scrolling movement when they are refreshed.



LineChart supports a few useful graphical options, such as different pen widths and colors, different grid and border styles, etc. This object can be used to show recent data produced by any HMITalk object or can be used to show the contents of any VB array of type double and with up to 1000 values.

Typically the FillPen method is used, followed by a call to the Draw method that forces the control to be repainted.

First: If the cache to be represented in a pen comes from a HMITalk pointvalue-cache, the implementation would look something like this:

```
LineChart1.FillPen1 HMITalk1.PointCachePointer(0)
LineChart1.Draw
```

Which means:

> Fill the first of four pens with the values stored in the cache that corresponds to the recent history of value changes captured for the first pointvalue managed by the HMITalk object named HMITalk1. The two lines can be executed at any moment in any part of the application's code, although we typically use the "OnPointCacheChanged" HMITalk's event to signal when it is the right moment to display the new contents of the cache.

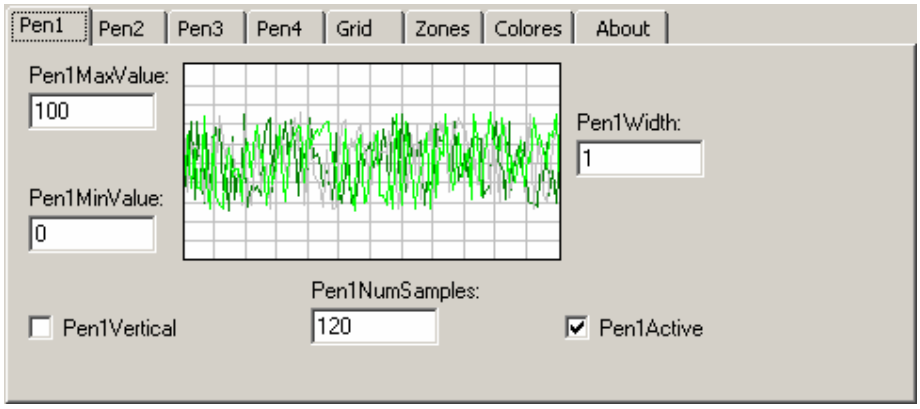
Second: If the cache to be represented in a pen comes from an array declared as a variable in the VB code, the implementation would look something like this:

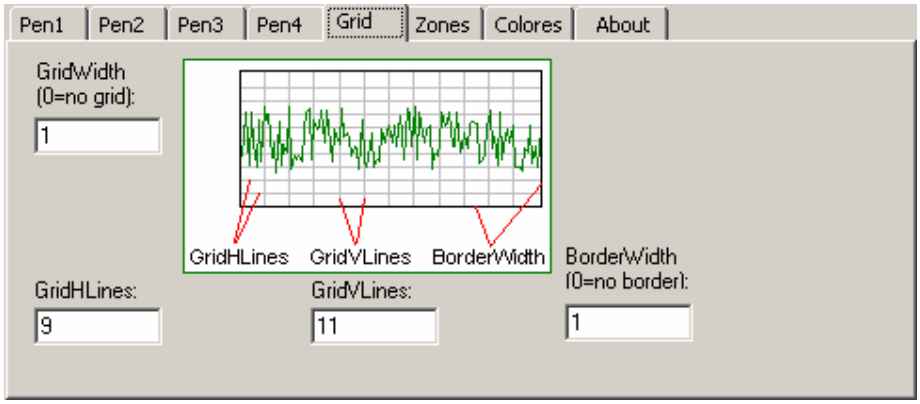
```
Dim MyArray(1000) as Double
...
```

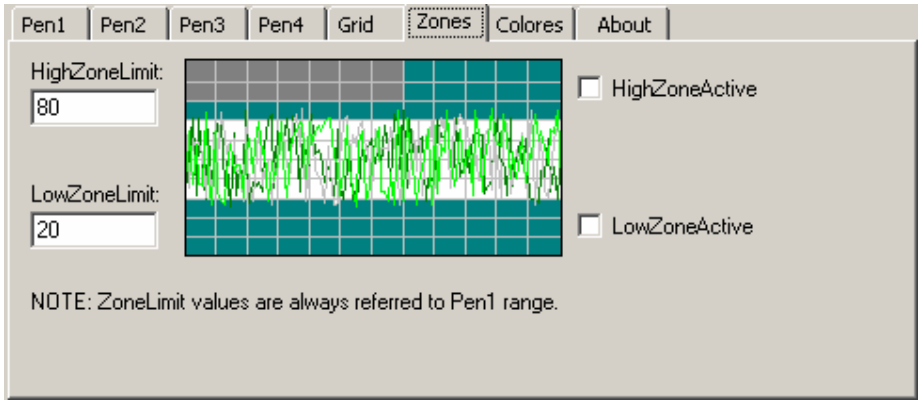
```
(Fill the array)
...
LineChart1.FillPen1 MyArray(0)
LineChart1.Draw
```

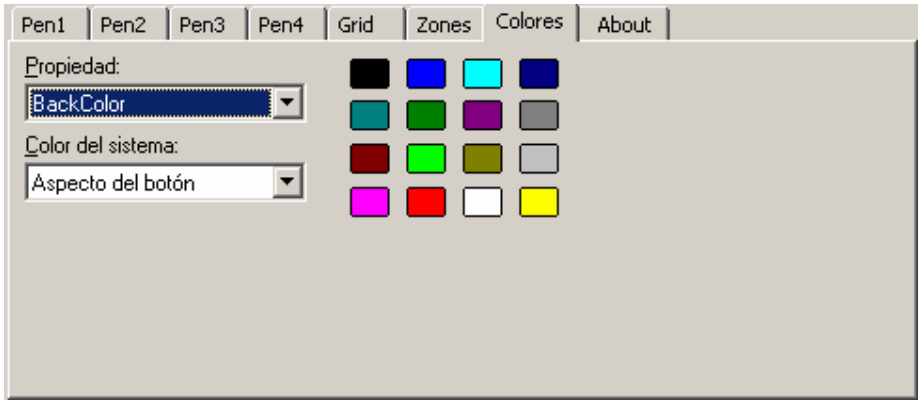
Which means:

Fill the first of four pens with the values stored in MyArray. The LineChart object will automatically take as many values from the array as declared in the Pen1Samples property, which corresponds to the pen used in the example. There is no need to load each array value individually since this is done internally by the method call.






Pen1
Pen2
Pen3
Pen4
Grid
Zones
Colores
About
HighZoneLimit:
80
LowZoneLimit:
20
HighZoneActive
LowZoneActive
NOTE: ZoneLimit values are always referred to Pen1 range.


Pen1
Pen2
Pen3
Pen4
Grid
Zones
Colores
About
Propiedad:
BackColor
Color del sistema:
Aspecto del botón


Pen1
Pen2
Pen3
Pen4
Grid
Zones
Colores
About
TAS-LineChart ActiveX, Version 7.5 for Windows 9x/NT/2000/Me/XP
CPKSoft - Nivaltec
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TAS-LineChart is a registered trademark of Carlos Perez Kuper.
web: http://www.nivaltec.com, http://www.nivaltec.com.ar
e-mail: hmitalk@nivaltec.com / cperezkuper@hotmail.com

2 Configuring the LineChart Control

Following is a list of the properties and methods used to configure the LineChart control.

2.1 BackColor Property

Description Returns or sets the color of the LineChart object's background.

Syntax [*form*.]*LineChart1*.**BackColor** [= *color&*]

Remarks This property assumes the default color value of the form when inserted. For example, if the form has a background value of gray, the BackColor value will be gray by default.

Data Type **Long**

2.2 BorderColor Property

Description Returns or sets the color of the LineChart object's background.

Syntax [*form*.]*LineChart1*.**BorderColor** [= *color&*]

Remarks The border can be eliminated setting the BorderWidth property to 0.

Data Type **Long**

2.3 BorderWidth Property

Description Returns or sets the width of the LineChart object, in pixels.

Syntax [*form*.]*LineChart1*.**BorderWidth** [= *integer%*]

Remarks The default setting for this property is 1. The border can be eliminated setting this property to 0.

Data Type **Integer**

2.4 GridColor Property

Description Returns or sets the color of the LineChart object's grid.

Syntax [*form*.]*LineChart1*.**GridColor** [= *color&*]

Data Type **Long**

2.5 GridHLines Property

Description Returns or sets the number of horizontal lines in the LineChart object's grid.

Syntax [*form*.]*LineChart1*.**GridHLines** [= *integer%*]

Remarks The default setting for this property is 10.

Data Type **Integer**

2.6 GridVLines Property

Description Returns or sets the number of horizontal lines in the LineChart object's grid.

Syntax [*form*.]*LineChart1*.**GridVLines** [= *integer%*]

Remarks The default setting for this property is 10.

Data Type **Integer**

2.7 GridWidth Property

Description Returns or sets the width of the LineChart object's grid, in pixels.

Syntax [*form*.]*LineChart1*.**GridWidth** [= *integer%*]

Remarks The default setting for this property is 1. The grid can be eliminated setting this property to 0.

Data Type **Integer**

2.8 HighZoneActive Property

Description Determines whether or not the high warning zone is active.

Syntax [*form*.]*LineChart1*.**HighZoneActive** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The high warning zone is active.
False	(Default) The high warning zone is not active.

Data Type **Integer** (Boolean)

2.9 HighZoneColor Property

Description Returns or sets the color of the LineChart object's high warning zone.

Syntax [*form*.]*LineChart1*.**HighZoneColor** [= *color&*]

Remarks The warning zones may be activated trough the following properties: HighZoneActive and LowZoneActive.

Data Type **Long**

2.10 HighZoneLimit Property

Description Determines the limit of the LineChart object's high warning zone.

Syntax [*form*.]*LineChart1*.**HighZoneLimit** [= *double#*]

Remarks The default setting for this property is 80. This limit is an absolute value and should be set in accordance with the span set for Pen1. The warning zones may be activated through the following properties: HighZoneActive and LowZoneActive.

Data Type **Double**

2.11 LowZoneActive Property

Description Determines whether or not the low warning zone is active.

Syntax [*form*.]*LineChart1*.**LowZoneActive** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The low warning zone is active.
False	(Default) The low warning zone is not active.

Data Type **Integer** (Boolean)

2.12 LowZoneColor Property

Description Returns or sets the color of the LineChart object's low warning zone.

Syntax [*form*.]*LineChart1*.**LowZoneColor** [= *color&*]

Remarks The warning zones may be activated trough the following properties: HighZoneActive and LowZoneActive.

Data Type **Long**

2.13 LowZoneLimit Property

Description Determines the limit of the LineChart object's low warning zone.

Syntax [*form*.]*LineChart1*.**LowZoneLimit** [= *double#*]

Remarks The default setting for this property is 20. This limit is an absolute value and should be set in accordance with the span set for Pen1. The warning zones may be activated through the following properties: HighZoneActive and LowZoneActive.

Data Type **Double**

2.14 Pen1Active Property

Description Determines whether or not the designated pen is active.

Syntax [*form*.]*LineChart1*.**Pen1Active** [= {True | False}]

Remarks The default setting for this property is **True**.

Value	Description
True	(Default) The designated pen is active.
False	The designated pen is not active.

Data Type **Integer** (Boolean)

2.15 Pen1Color Property

Description Returns or sets the color of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen1Color** [= *color&*]

Data Type **Long**

2.16 Pen1MaxValue Property

Description Determines the maximum range of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen1MaxValue** [= *double#*]

Remarks This limit is an absolute value and should be set in accordance with the span set for the designated pen. The default value for this property is 100.

Data Type **Double**

2.17 Pen1MinValue Property

Description Determines the minimum range of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen1MinValue** [= *double#*]

Remarks This limit is an absolute value and should be set in accordance with the span set for the designated pen. The default value for this property is 0.

Data Type **Double**

2.18 Pen1NumSamples Property

Description Returns or sets the number of samples for the designated pen.

Syntax [*form*.]*LineChart1*.**Pen1NumSamples** [= *integer%*]

Remarks The default value for this property is 60. Valid settings for this property are between 2 to 120.

If you are using the LineChart control along with the HMITalk control, you should set the PointCacheSamples property to the same value used in this property.

Data Type **Integer**

2.19 Pen1Vertical Property

Description Determines whether or not the designated pen should be drawn vertically.

Syntax [*form*.]*LineChart1*.**Pen1Vertical** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The designated pen will be drawn vertically.
False	(Default) The designated pen will not be drawn vertically.

Data Type **Integer** (Boolean)

2.20 Pen1Width Property

Description Returns or sets the width of the designated pen, in pixels.

Syntax [*form*.]*LineChart1*.**Pen1Width** [= *integer%*]

Remarks The default setting for this property is 1.

Data Type **Integer**

2.21 Pen2Active Property

Description Determines whether or not the designated pen is active.

Syntax [*form*.]*LineChart1*.**Pen2Active** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The designated pen is active.
False	(Default) The designated pen is not active.

Data Type **Integer** (Boolean)

2.22 Pen2Color Property

Description Returns or sets the color of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen2Color** [= *color&*]

Data Type **Long**

2.23 Pen2MaxValue Property

Description Determines the maximum range of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen2MaxValue** [= *double#*]

Remarks This limit is an absolute value and should be set in accordance with the span set for the designated pen. The default value for this property is 100.

Data Type **Double**

2.24 Pen2MinValue Property

Description Determines the minimum range of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen2MinValue** [= *double#*]

Remarks This limit is an absolute value and should be set in accordance with the span set for the designated pen. The default value for this property is 0.

Data Type **Double**

2.25 Pen2NumSamples Property

Description Returns or sets the number of samples for the designated pen.

Syntax [*form*.]*LineChart1*.**Pen2NumSamples** [= *integer%*]

Remarks The default value for this property is 60. Valid settings for this property are between 2 to 120.

If you are using the LineChart control along with the HMITalk control, you should set the PointCacheSamples property to the same value used in this property.

Data Type **Integer**

2.26 Pen2Vertical Property

Description Determines whether or not the designated pen should be drawn vertically.

Syntax [*form*.]*LineChart1*.**Pen2Vertical** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The designated pen will be drawn vertically.
False	(Default) The designated pen will not be drawn vertically.

Data Type **Integer** (Boolean)

2.27 Pen2Width Property

Description Returns or sets the width of the designated pen, in pixels.

Syntax [*form*.]*LineChart1*.**Pen2Width** [= *integer%*]

Remarks The default setting for this property is 1.

Data Type **Integer**

2.28 Pen3Active Property

Description Determines whether or not the designated pen is active.

Syntax [*form*.]*LineChart1*.**Pen3Active** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The designated pen is active.
False	(Default) The designated pen is not active.

Data Type **Integer** (Boolean)

2.29 Pen3Color Property

Description Returns or sets the color of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen3Color** [= *color&*]

Data Type **Long**

2.30 Pen3MaxValue Property

Description Determines the maximum range of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen3MaxValue** [= *double#*]

Remarks This limit is an absolute value and should be set in accordance with the span set for the designated pen. The default value for this property is 100.

Data Type **Double**

2.31 Pen3MinValue Property

Description Determines the minimum range of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen3MinValue** [= *double#*]

Remarks This limit is an absolute value and should be set in accordance with the span set for the designated pen. The default value for this property is 0.

Data Type **Double**

2.32 Pen3NumSamples Property

Description Returns or sets the number of samples for the designated pen.

Syntax [*form*.]*LineChart1*.**Pen3NumSamples** [= *integer%*]

Remarks The default value for this property is 60. Valid settings for this property are between 2 to 120.

If you are using the LineChart control along with the HMITalk control, you should set the PointCacheSamples property to the same value used in this property.

Data Type **Integer**

2.33 Pen3Vertical Property

Description Determines whether or not the designated pen should be drawn vertically.

Syntax [*form*.]*LineChart1*.**Pen3Vertical** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The designated pen will be drawn vertically.
False	(Default) The designated pen will not be drawn vertically.

Data Type **Integer** (Boolean)

2.34 Pen3Width Property

Description Returns or sets the width of the designated pen, in pixels.

Syntax [*form*.]*LineChart1*.**Pen3Width** [= *integer%*]

Remarks The default setting for this property is 1.

Data Type **Integer**

2.35 Pen4Active Property

Description Determines whether or not the designated pen is active.

Syntax [*form*.]*LineChart1*.**Pen4Active** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The designated pen is active.
False	(Default) The designated pen is not active.

Data Type **Integer** (Boolean)

2.36 Pen4Color Property

Description Returns or sets the color of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen4Color** [= *color&*]

Data Type **Long**

2.37 Pen4MaxValue Property

Description Determines the maximum range of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen4MaxValue** [= *double#*]

Remarks This limit is an absolute value and should be set in accordance with the span set for the designated pen. The default value for this property is 100.

Data Type **Double**

2.38 Pen4MinValue Property

Description Determines the minimum range of the designated pen.

Syntax [*form*.]*LineChart1*.**Pen4MinValue** [= *double#*]

Remarks This limit is an absolute value and should be set in accordance with the span set for the designated pen. The default value for this property is 0.

Data Type **Double**

2.39 Pen4NumSamples Property

Description Returns or sets the number of samples for the designated pen.

Syntax [*form*.]*LineChart1*.**Pen4NumSamples** [= *integer%*]

Remarks The default value for this property is 60. Valid settings for this property are between 2 to 120.

If you are using the LineChart control along with the HMITalk control, you should set the PointCacheSamples property to the same value used in this property.

Data Type **Integer**

2.40 Pen4Vertical Property

Description Determines whether or not the designated pen should be drawn vertically.

Syntax [*form*.]*LineChart1*.**Pen4Vertical** [= {True | False}]

Remarks The default setting for this property is **False**.

Value	Description
True	The designated pen will be drawn vertically.
False	(Default) The designated pen will not be drawn vertically.

Data Type **Integer** (Boolean)

2.41 Pen4Width Property

Description Returns or sets the width of the designated pen, in pixels.

Syntax [*form*.]*LineChart1*.**Pen4Width** [= *integer%*]

Remarks The default setting for this property is 1.

Data Type **Integer**

2.42 Draw Method

Description Redraws the LineChart control with the contents of the active pens. This method should be used to refresh the LineChart control every time one or more pen's caches have been changed.

Syntax [*form*.]*LineChart1*.**Draw**

Remarks This method must be used after the FillPen1, FillPen2, FillPen3 and FillPen4 methods in order to refresh the drawing.

This method should be used in combination with the OnLineChartUpdated event (see HMITalk's manual).

Part	Description
Array	The name of the data array containing the data to be loaded to the point cache. It is actually a pointer to the data array. (DataType=**Double**)
returned value	None

Example This example shows how to display three standard arrays filled with custom values.

```
' We fill the array using a Timer control;
' don't forget to set the Interval property
' to a proper value, such as 1000 ms (1 second).
Private Sub Timer1_Timer
    ' Declare the needed variables
    Static Aux(1 to 3) As Double
    Static Cache(1 To 60, 1 to 3) As Double

    For j% = 1 To 3
        ' Prepare the auxiliary value
        Aux(j%) = Aux(j%) + j% * 10
        If Aux(j%) > 90 Then Aux(j%) = 10
        ' Now rotate the cache...
        For i% = 1 To 59
            Cache(i%, j%) = Cache(i% + 1, j%)
        Next i%
```

```
            '...and fill it with the new value
            Cache(60, j%) = Aux(j%)
        Next j%

        ' Finally, load the caches and draw.
        LineChart1.FillPen1  Cache(1, 1)
        LineChart1.FillPen2  Cache(1, 2)
        LineChart1.FillPen3  Cache(1, 3)
        LineChart1.Draw
End Sub
```

2.43 FillPen Method

Description Fills the cache of the designated pen with the indicated array of samples. Don't forget to call the Draw method after loading the LineChart cache, in order to refresh the LineChart drawing.

Syntax [*form*.]*LineChart1*.**FillPen (**Pen%, Array(0)#**)**

Part	Description
Pen%	The number of the pen to be filled (1-4). (DataType=**Integer**)
Array(0)#	The name of the data array containing the data to be loaded to the point cache. It is actually a pointer to the data array. (DataType=**Double**)

Remarks This method should be used in combination with the OnPointCacheChanged event (see HMITalk's manual).

Example The following example shows how to display the new data when the point cache of a HMITalk object is scrolled using the LineChart control.

```
Private Sub HMITalk1_OnPoinCacheChanged (Point As Integer)
    LineChart1.FillPen 1, HMITalk1.PointCachePointer(Point)
    LineChart1.Draw
End Sub
```

2.44 FillPen1, FillPen2, FillPen3 and FillPen4 Methods

Description Alternative names to the FillPen method where the pen number is implicit in the method name instead of using a parameter.

2.45 ScrollPen Method

Description Scrolls the cache of the designated pen inserting as new sample the parameter **SampleValue**.

Syntax [*form*.]*LineChart1*.**ScrollPen (**Pen%, SampleValue#**)**

Part	Description
Pen%	The number of the pen to be scrolled (1-4). (DataType=**Integer**)
SampleValue#	The sample value to be included as the last element of the data array. (DataType=**Double**)

Remarks Don't forget to call the Draw method after scrolling the LineChart cache, in order to refresh the LineChart drawing.

Example The following example shows how to display the new data when the point cache of a HMITalk object is scrolled using the LineChart control.

```
Private Sub Command1_Click()
    LineChart1.ScrollPen 1, HMITalk1.PointValue(0)
    LineChart1.Draw
End Sub
```

2.46 ScrollPen1, ScrollPen2, ScrollPen3 and ScrollPen4 Methods

Description Alternative names to the ScrollPen method where the pen number is implicit in the method name instead of using a parameter.