HistogramChart Control Reference

Show the distribution of a measured value against its specification limits, with Cp and Cpk.

Reference **Controls** **Charts** HistogramChart

Available from FrameworX 10.1.6.

The HistogramChart is a process-capability histogram: it groups the samples of a measured characteristic into bins, draws the lower and upper specification limits (LSL, USL) and the target, overlays a normal curve and computes the capability indices Cp and Cpk (and optionally Pp and Ppk).

Requirements
Configuration
Example
Runtime Execution

Requirements

This component is Portable. It runs both on Windows and on Web Pages hosted on any platform.

Clients: works in the Rich Client and in the web client (HTML5), with the same values and layout on both. Verified on FrameworX 10.1.6.

Configuration

1. Go to **Displays / Draw**.
2. In the Components Panel, select **Charts**, then choose **HistogramChart**.
3. Click or drag-and-drop the component into the drawing area.
4. Double-click the object to open the configuration window.

Data Binding

- **Live mode** (default): bind **LinkedValue** to a tag. The chart keeps the newest **SampleSize** value changes.
- **Table mode**: set **UseDataTable** to true and point **DataSourceLink** to a Dataset query or table (`@Dataset.Query.Name` / `@Dataset.Table.Name`) or a tag that holds a DataTable (`@Tag.Name`). **ValueColumn** names the column of samples.
- **LowerSpecLimitLink**, **UpperSpecLimitLink** and **TargetValueLink** (a number or a tag) draw the LSL, USL and Target lines.

Behavior

- Bins have equal width. **BinCount** 0 chooses the number of bins automatically (Sturges rule, 5 to 30). With **UseFixedRange**, the bins cover RangeMinimum to RangeMaximum and values outside are counted separately.
- Cp and Cpk use the within-subgroup sigma (average moving range / 1.128): Cp = (USL LSL) / 6 and Cpk = min(USL mean, mean LSL) / 3. With only one limit set, Cpk uses that side.
- With **ShowPp**, Pp and Ppk are computed in the same way with the overall sample standard deviation (n 1).
- **ShowNormalCurve** overlays the normal curve of the mean and the overall standard deviation.
- Capability needs at least 2 samples and at least one specification limit; otherwise the chart shows a message instead of the indices.

Properties

Property	Description	Default
LinkedValue	Live mode: the measured value.	(empty)
UseDataTable	Read the samples from a table instead of sampling LinkedValue.	false
DataSourceLink	Table mode: the data source (Dataset query or table, or a DataTable tag).	(empty)
ValueColumn	Table mode: column that holds the samples.	Value
SampleSize	Live mode: number of newest samples kept.	100
BinCount	Number of bins; 0 for automatic.	0
UseFixedRange	Use a fixed range (RangeMinimum to RangeMaximum) for the bins.	false
RangeMinimum	Start of the fixed range.	0
RangeMaximum	End of the fixed range.	100
LowerSpecLimitLink	Lower specification limit (LSL), a number or a tag.	(empty)

UpperSpecLimitLink	Upper specification limit (USL), a number or a tag.	(empty)
TargetValueLink	Target value, a number or a tag.	(empty)
ShowNormalCurve	Overlay the normal curve.	true
ShowCapability	Show the statistics text (n, mean, Cp, Cpk).	true
ShowPp	Also show Pp and Ppk.	false
ShowAxisLabels	Show the axis labels.	true
Decimals	Number of decimals of the mean and sigma in the statistics text.	3
CurveStrokeThickness	Thickness of the normal curve.	2
LabelFontSize	Font size of the labels.	11
LabelFontFamily	Font family of the labels.	Verdana

Colors follow the Display theme by default: each color property has a theme slot. Set an explicit color (#AARRGGBB) only to override the theme. Color properties: **BarFill** (theme accent), **CurveStroke** (theme amber), **SpecLimitStroke**, **TargetStroke**, **GridStroke** and **LabelForeground**.

Example

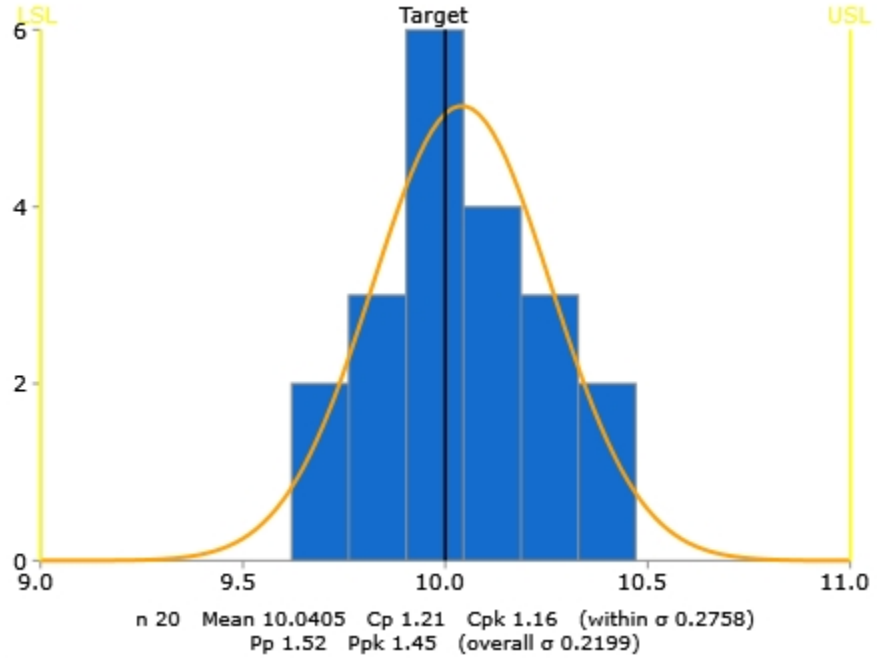
Twenty measurements of a part dimension in table mode, with **LowerSpecLimitLink** 9, **UpperSpecLimitLink** 11, **TargetValueLink** 10, **ShowPp** true and **Decimals** 4. The chart shows:

Statistic	Value
n	20
Mean	10.0405
Cp / Cpk	1.21 / 1.16 (within 0.2758)
Pp / Ppk	1.52 / 1.45 (overall 0.2199)
Bins (automatic)	6 bins with 2, 3, 6, 4, 3 and 2 samples

The x axis runs from LSL (9.0) to USL (11.0), with the Target line at 10.0 and the normal curve over the bars.

Runtime Execution

At runtime the HistogramChart recomputes the bins and the indices as new samples arrive or the table changes. The image shows the example above in the Rich Client; the web client shows the same values.



In this section...