Object configuration

"Detail" dialog box

A dialog window is intended for a configuration of objects (flows) in a graph. Every object has its own **Detail** window to set the parameters. Order of the objects is changed by buttons ⬆ ⬇ .

— □ ✕

↺ Revert | 🖫 Save

◪ ⋯

▤ Detail | ↑ ↓ ✕

☐ Alternate Graph Object

⬇ Sec ⊗

Description | 🖻 | ☐ Interactive

Technical Units | Universal Column | ☑ Visible in Table
🖻 | None ⌄

☑ Drawing | Order | Level | Axis
Above 0 ⌄ | 1 | 0 | Number

Digital Axis Description | Sensitivity | ☐ Draw Till a Current Time
🖻 | 0 | ☐ Remove Spaces

| Line | Bar Graph | Strip Graph | Candlestick | OHLC | Boxplot |

Ancestor | Type | Link
0 | Simple ⌄ | Smooth ⌄

☐ Hide With Ancestor ☐ Draw From Ancestor

☑ **Line** | Width | Opaque
▉ | ━━━━━━━ ⌄ | 1.0 | 100

☐ **Fill** | | Opaque
▉ | ▪ ⌄ | 100

☐ **Marker** | | Opaque
▉ | ○ ● ✕ ＋ ◆ · ☐ Highlighted | 100

≫

☐ **Value** | | Opaque
Text | ☐ Frame | | 100
■ | ■ | ☐ Fill ▉ | ▢▢▢

≫

Alternate graph object

Alternate object is a special default "object". The object reserves a place for the graphic flow, data of which are gained from the script of the picture, where the corresponding graph is placed. Displaying and contents of this object is defined in the picture script. A graph does not contain this object until it is activated from the script. Its label is "*".

Description

Description of the given object which will be shown in the graph table - the column **Name**. It is possible to use the Dictionary (to open press **CTRL+L**). If the parameter is not entered, the graph table will contain the description defined in the object configuration* (the parameter **Description**). If there is no description defined in the object configuration, the table graph will show the object name.

* For structured objects - if a structured object is archived, or it uses the reference to object which is archived, the description or the name of object from the archive will be used. This description is obtained based on the archived object. Mostly it is obtained from the definition of object, which is archived. If structured object is not archived, the column description from the structure definition will be used. If this column does not exist, the description of the structured object with the row number and column name will be used.

* For structured archive objects - there is used the description or name of object from archive. This description is obtained based on the archived object. Mostly it is obtained from the definition of object, which is archived. Name of the column structured archive object does not includes the name of column.

Note: The description in the graph table may be modified from a script.

Interactive

If the option **Interactive** is checked off and the User places mouse pointer on some value in the graph, this value is emphasized by circle.

Tooltip

Placing the mouse pointer on some value in the graph the window with activity name and its value will be displayed.

Note: Option **Tooltip** is visible only if the option **Interactive** is checked off.

Technical units

Technical units of the object that will be displayed in the graph. Technical units will be shown in the graph table - the column **Units**. If the parameter is not entered, the graph table will contain the technical units defined in the object configuration* (the parameter **Technical units**). If there is no technical units defined in the object configuration, the table graph will show no technical units.

* For structured objects - if the structured object is archived, there will be used the technical units defined for respective archive object (object of *Historical value* type). If is not archived, there will be used the technical units defined in the configuration of the structured object.

Universal column

The parameter allows to define content of the column **Universal**. Items of the parameter are described for the parameter Table columns.

Visible in table

Shows / hides the object in the graph table.
If the parameter is not checked off, the object will not be displayed in the graph table but its flow will be displayed.

Drawing

Defines a drawing style relative to zero value on y-axis.

- *From X axis* - drawing starts from x-axis
- *Above 0* - drawing starts from 0 (zero) on Y-axis upward
- *Below 0* - drawing starts from 0 (zero) on Y-axis downward

Enable drawing

If the option is checked off, the graphic flow of the object will be drawn immediately after opening the graph on D2000 HI desktop. If not checked off, the graphic flow will not be displayed after opening the graph (can be enabled later from the graph window).

Drawing order

The parameter defines an order of flow drawing. If the same value is set for more flows, they are drawn according to the serial number.

Each layers of the graph are drawn in the following order:

1. Flow fill
2. Raster
3. Lines + texts

Level

Allows to specify membership to a particular level. Admissible values are in the range 0..50.

This setting is applied when the option displaying in Object levels is selected either in graph configuration dialog box or in the panel above the graph window. For more information on this topic - see the chapter "Graph configuration" dialog box.

Assigned axis

Selection of axis that is to be assigned to the object. Assigning an axis is performed by selection of corresponding axis number (from 1 to 99) from **Axis number** item.

A symbol close to Axis number displays the axis type - A = analogue, D/<figure> = digital/number of level. Level and description on digital axis is not possible to set if some point uses the analogue axis. These data are not necessary then.

Note:
If the object is Boolean type, the digital axis has to be assigned to it. Object values will be drawn onto the digital axis for which you must select a level (**Digital axis level and description** item). Each of defined levels can have a description.
Using the digital axes is described in details in the topic Axis configuration.

Digital axis level and description

Number and description of the digital axis.

Sensitivity

Sets the sensitivity for point on the graph to display the values. The value will display with different y-coordinate as the previous value only if the value change is higher than sensitivity.
For example - the value 0.000589 comes to be drawn in graph. Next value is 0.000587 which will be drawn as change in graph only if the sensitivity is 0.000001, otherwise the line is drawn on the level 0.000589.

Draw till a current time

Some of the flows can contain prepared data to the future, e.g. the predictive flows. The option limits a data drawing up to the current time.

Drop spaces

Causes to leave out the spaces without data in a graph flow.

Draw

Selection the parameters for graph drawing. By marking the individual parameters is possible to define the particular parameters of drawing. The options for definition are displayed in the right part of configuration window. Only parameters for line, fill and marker can be defined together.

Line

Defines the colour, style (solid line, dotted line, ...), transparency (0-transparent, 100-opaque) and line width in the range of 0,5 - 5,5 multiple of a point width on the screen.

Fill

Fill pattern of the line and transparency (0-transparent, 100-opaque).

Markers

Defines colour, type (6 types), transparency (0-transparent, 100-opaque) and highlighting of the marker.

Value

Defines the parameters for displaying of numerical value in graph.

1 - setting of the color transparency, 0-transparent, 100-opaque.

Text	- color of the text
Frame	- enable / disable to draw a frame and to define its color
Fill	- enable / disable the fill and its color and opaque
Font	- font type
Position	- position of the text in regard to position of presented value in graph
Only for last value	- enable / disable to display only the last value or all values

Bar graph

There are several settings that are defined for a graphic flow of Bar graph type and they are distinctive for this graph type.

Function
One column of bar graph need not represent just one object value but a whole group of values. Column height is given as a result of a function applied on whole group of values. You can choose from the following functions:

- By value
- Average
- Weighted average
- Sum total
- Maximum
- Minimum
- Count
- Last value

For the function **By value**, bars are drawn only once for each value on the position corresponding to the value time. If the graph contains several flows of Bar graph type, bars are drawn not to overlap each other. Bar width is calculated so that a group of bars for one time is drawn in front of drawing next group of bars.

Requirements:

1. The function can be used only for graphs having **Live data** parameter unchecked.
2. If the function is used, then it must be used for all graphic flows of *Bar graph* type in the graph.
3. The parameters **Period** is disabled for the function.

For correct functionality:

1. Data must not be periodical, but they should be almost equally spread on time axis (e.g. monthly data in annual graph – they are not periodical).
2. If the graph contains several such flows, then:
   - their numbers of values must be the same
   - values must start in the same time

Bar drawing modification - bar width can go to 1 pixel. This modification eliminates the probability of drawing several values in one bar (in case, that there are several values in space required for drawing a bar).

Period
The parameter specifies the minimum possible period for drawing a bar. But current displayed period may be larger in dependence on the current width of time axis. Current period will always be multiple of this period.

Limits
Limits are defined only for a graphic flow of **Bar graph** type. Graph definition allows to use a color resolution of values according to its position. The value may be:

- below the lowest limit (VLL - Very Low Limit),
- between the lowest and low limits (LL - Low Limit),
- between low and high limits - normal status,
- between high and the highest limits (HL - High Limit),
- above the highest limit (VHL - Very High Limit).

One color may be assigned to each of the limits. Values between defined limits (normal status) are drawn in the color chosen for the graphic flow in the Object configuration dialog box.

The way of displaying values according to the limits as described above, may be disabled - **Do not use** option.
Checking **From archive** option allows to use values of the limits defined during the configuration of an object:

- that has been archived (for example VLL, LL, HL and VHL values are used for object of the *User variable* type),
- that has been selected for graphic displaying.

The option **Use defined** allows to define the limits directly by typing into the **LL**, **VLL**, **HL** and **VHL** input edit boxes.

Strip graph

Strip graph is suitable to display time flows of alarms, eventually other objects that acquire discrete values. Digital axis have to be assigned to strip graph. There are defined several settings for strip graph, that are other than other types of graphs.

Draw within full digital axis level height
The parameter allows to draw strips of the graphic flows either within full height of the digital axis level or only within one half of the level (older versions of D2000 system).

Value

The dropdown box consists the list of possible values of the object the flow of which will be displayed. Maximum number of values is 10. You must define a mode of displaying of each value by means of **Color**, **Pattern** and **Opaque** (0-transparent, 100-opaque). Selecting empty pattern disables displaying the strip for particular value.

Frame
Defines the border of the flows, colour and frame width in the range of 0,5 - 5,5 multiple of a point width on the screen.

Candlestick / OHLC graph / BoxPlot

Graph works in two modes:

1. **Changed** - period is 0
   If the value changes the column is drawn whereby the color of column depends on positive, none or negative change.


2. **Statistic** - period differs from 0
   Within the range, according to set period, it calculates an open, maximum, minimum and close value from input data. These values are represented by column bar that illustrates range of open and close value, and by thin lines that illustrates maximum and minimum of value within the given time period. If the checkbox **Discrete values** is checked off, the first new valid value from the interval is considered as open value. If the checkbox is not checked off the value valid at the began of open interval is considered as the open value of the interval.
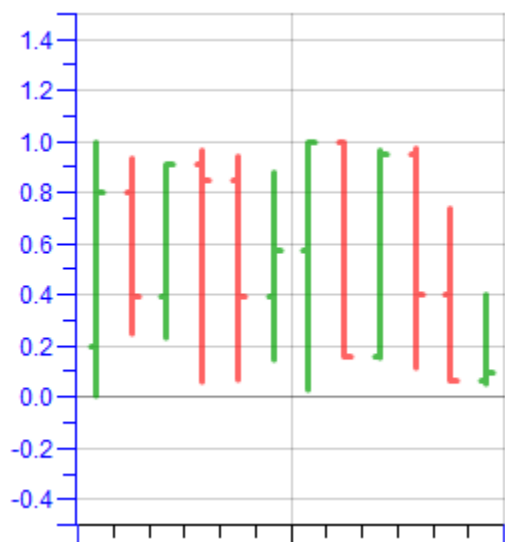
Based on settings, data will be displayed either in the candlestick graph or OHLC one.

Example of candlestick graph:
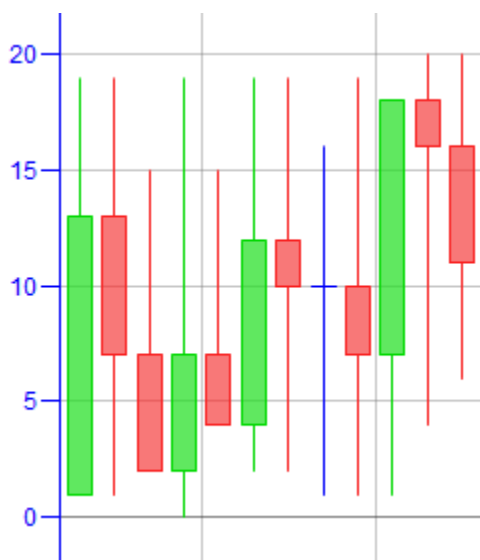
Example of OHLC graph:

BloxPlot graph

In descriptive statistics, a box plot or boxplot is a convenient way of graphically depicting groups of numerical data through their quartiles. Middle rectangle part (box) is bounded by the first and third quartiles, inside the box there is a line that draw a median. Boxplots may also have lines extending vertically from the boxes (whiskers) indicating the lowest data 1,5 * IQR of the lower quartile and the highest data 1,5 * IQR of the upper quartile. Individual outliners are plotted as small circles, extremely distant points as x marks. In configuration dialog you must define a period (unit and quantity), which defines an interval for calculation of statistics and display of one column. You may also define color and width of lines and fill of middle part (below and above the median).

Example of BoxPlot graph:
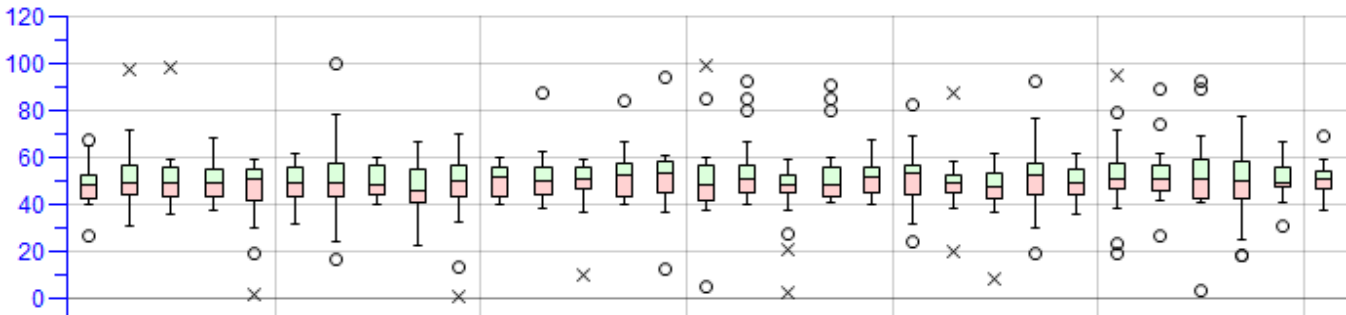
Link

Link between the points in graph can be:

- Straight
- Smooth

Types of graphic flows

You can choose from the following types of graphic flows:

- Simple
- Additive
- Subtractive
- Sign

Note: Additive, subtractive and sign graphs calculate a flow by addition (subtraction) to the calculated value of the previous additive (subtractive) flow. Undefined value is understood as zero value. In case of sign graphs there will sum separately the plus items of the flow and plus items of previous flow, and minus items of the flow and minus items of previous flow (example of sign graph is mentioned below).

Graph samples:

smooth line graph	straight line graph	bar graph

marker graph	strip graph
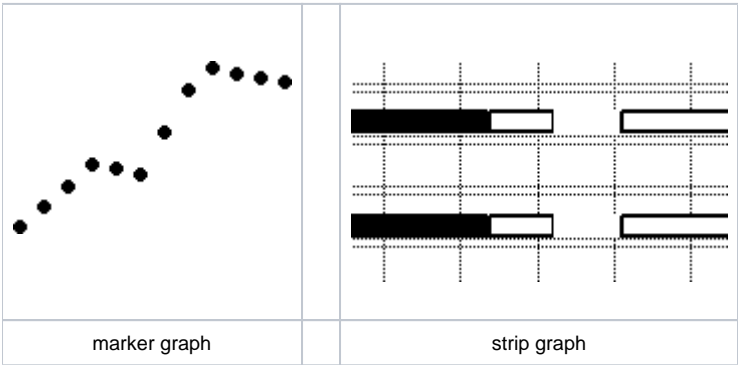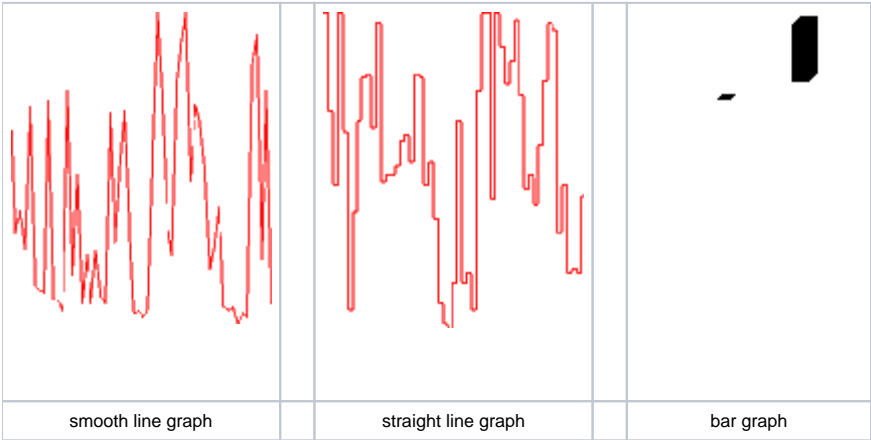
Other types are in the following figure:
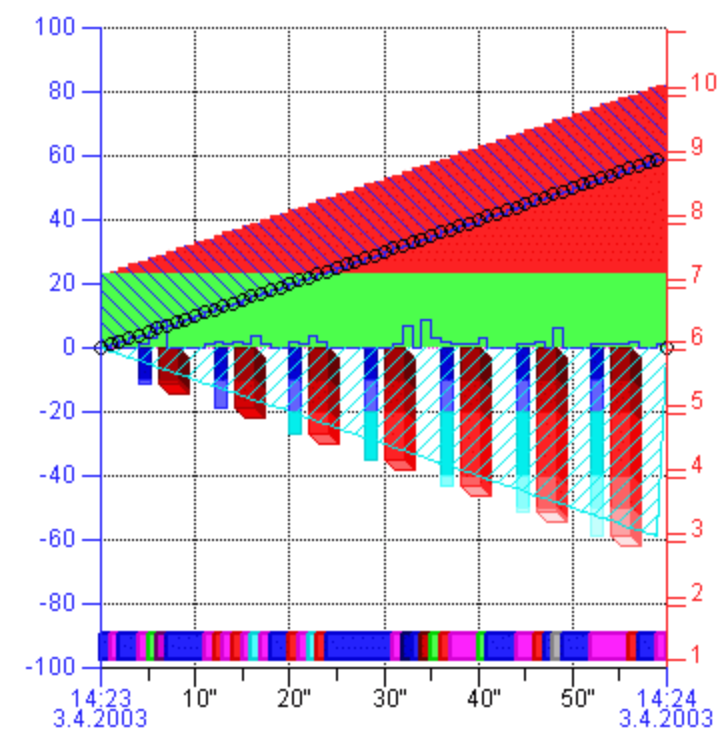
Example of sign addition:

Settings the flows:

N.	O.	Object name	Display	Gr. type	Axis/Level	Level	Color(s)	Description
1.	1.	*	±Fill	Simple	1	0	🟩	
2.	2.	*	±Fill	Signed 1	1	0	🟥	
3.	3.	*	±Fill	Signed 2	1	0	🟦	
4.	4.	*	±Line	Subtractive 3	1	0	—	

Data:
flow 1: 50,30,-50
flow 2: -10,10,20
flow 3: -30,20,-20
flow 4: 0

Result:
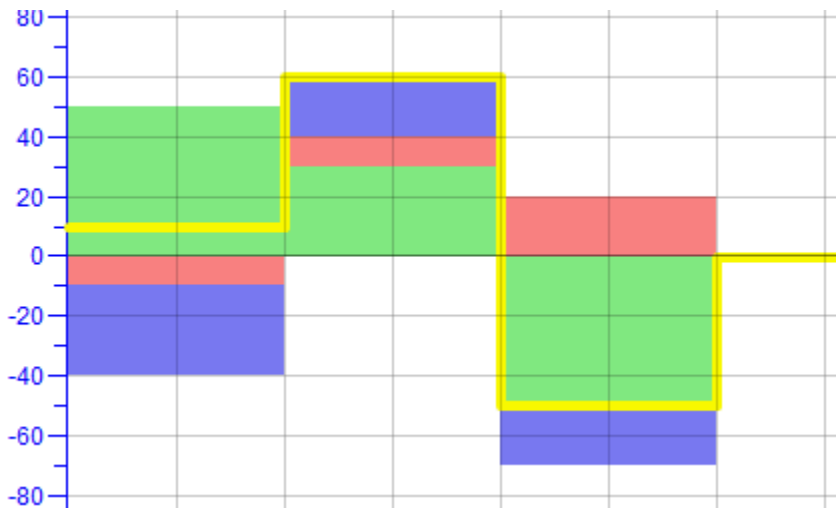
Additive / Subtractive

Ancestor

The parameter defines a serial number of an object from list of objects - the graphic flow of the object will be added (subtracted) to (from) this defined ancestor. The zero value of the parameter means that the ancestor is to be the nearest object (with an additive / subtractive type of graphic flow) above the actual object in the list of objects.

To add (subtract) the flow to (from) the ancestor's flow, the values of the parameters Assigned axis and Drawing must be identical for both flows.

Note 1: The parameter is only enabled for additive or subtractive graphs (see the parameter Types of graphic flows).
Note 2: Undefined value is understood as zero value.

Hide with ancestor

If the parameter is checked off and the graphic flow of given object is hidden in the graph and the user hides the flow of the ancestor, it also hides the graphic flow (as well as the flow of the object (with the parameter checked off) that is "successor" to given object, etc.).

If the flow is hidden in the graph in the way described above, showing the flow of its ancestor shows the flow too.

Note: the actions described above are recursive for all successors.

Example:
There are three objects defined in a graph: *Obj1*, *Obj2* and *Obj3*. The object *Obj1* is the ancestor to the object *Obj2* and *Obj2* is the ancestor to the object *O bj3*. All the objects have the parameter **Hide with ancestor** checked off in their configuration and are visible in the graph.
Hiding the flow of the object *Obj1* in the graph hides the flows of the objects *Obj2* and *Obj3*. And then showing the flow of the object *Obj1* shows the flows of the objects *Obj2* and *Obj3*.

Draw from ancestor

If the parameter is checked off, the graphic flow (additive/subtractive) will be drawn from its ancestor no matter, whether the ancestor is shown or hidden in the graph..
For correct functioning, the parameter Add / subtract also hidden must be checked off too.

Example:
There are three objects defined in graph. The object **Obj1** is the ancestor to the object **Obj2** and **Obj2** is the ancestor to the object **Obj3**.
The graphic flows of the objects are shown on the figure 1.
Figure 2: the flow of **Obj2** is hidden and **Obj3** has the parameter **Draw from ancestor** checked off in its configuration.
Figure 3: the flow of **Obj2** is hidden and the parameter **Draw from ancestor** is NOT checked off in the configuration of **Obj3**.
Figure 4: the flow of **Obj2** is hidden and the parameter **Draw from ancestor** is NOT checked off in the configuration of **Obj3** and the parameter **Add /subtract also hidden** is NOT checked off (i.e. the flow of the object **Obj3** is drawn from the flow of **Obj1**).
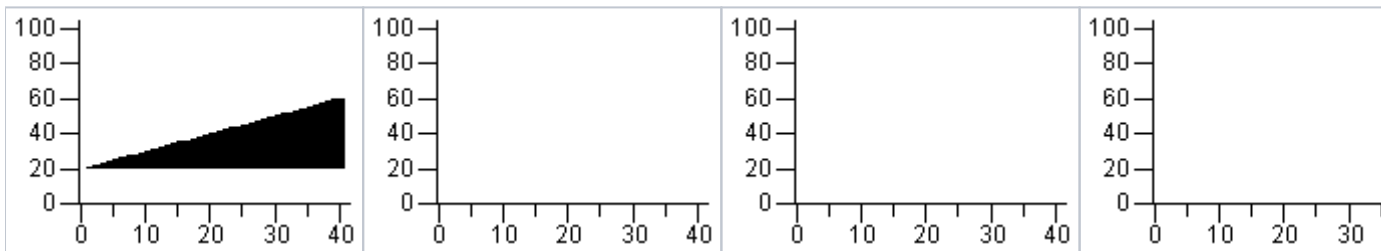
figure 1	figure 2	figure 3	figure 4

Related pages:

Configuration of graphs - Objects