4D View®

Language Reference
Windows® / Mac OS®

4D View®
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4D View - Language Reference
Version 2004.1 for Windows® and Mac OS®

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1

Introduction

The 4D View plug-in adds routines to the 4th Dimension language allowing you to automate a number of manual tasks.

Using 4D View commands, you can:

- Execute any 4D View menu command
- Open and save documents
- Set headers and footers for a document
- Set display and entry attributes
- Work with formulas for calculation, pictures, fields, etc.

4D View routines are preceded with the "PV" prefix (with a space) so that they can be distinguished from standard 4th Dimension routines and other plug-ins' routines.

About the 4D View documentation

4D View documentation is composed of two manuals: the *User* and *Language* manual.

This manual, *Language Reference*, details product use and syntax for the 4D View programming language. For more information on menus and general usage of the 4D View plug-in, refer to the 4D View *User Reference* manual.

In the documentation, 4D View commands appear in capitals and in special characters: PV OPEN DOCUMENT.

Functions (routines returning a value) start with a capital and are written in lower-case letters: PV Get on command method.

In the method editor, the 4D View commands are displayed in bold italics, differentiating them from built-in 4th Dimension commands.

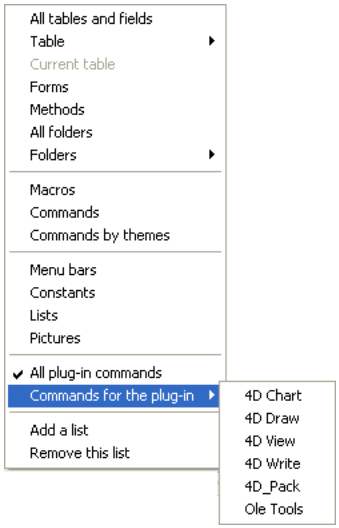
```
    ` 4th Dimension command
QUERY ([Clients];[Clients]S_Kode=cLi_Scode_V)
If (Records in selection ([Clients])=1)

        ` 4D View command
⇒       PV BLOB TO AREA (theArea;Table(->[Clients]);Field(->[Clients]Pict))
End if
```

The current documentation offers a number of examples for different 4D View commands illustrating their use. It is likely that several commands may be necessary to effectively illustrate a given example. Also, in the PDF version, a special character (⇒) denotes a line of code in the example where the name of the described command appears.

In certain examples in the documentation, a line of code may extend to a second line due space constraints. Enter these examples in your code without a carriage return using a single line.

Commands in the method editor

4D View commands can be displayed in a list in the 4th Dimension Method editor. The list can contain either the 4D View commands only, or all the available plug-ins commands:



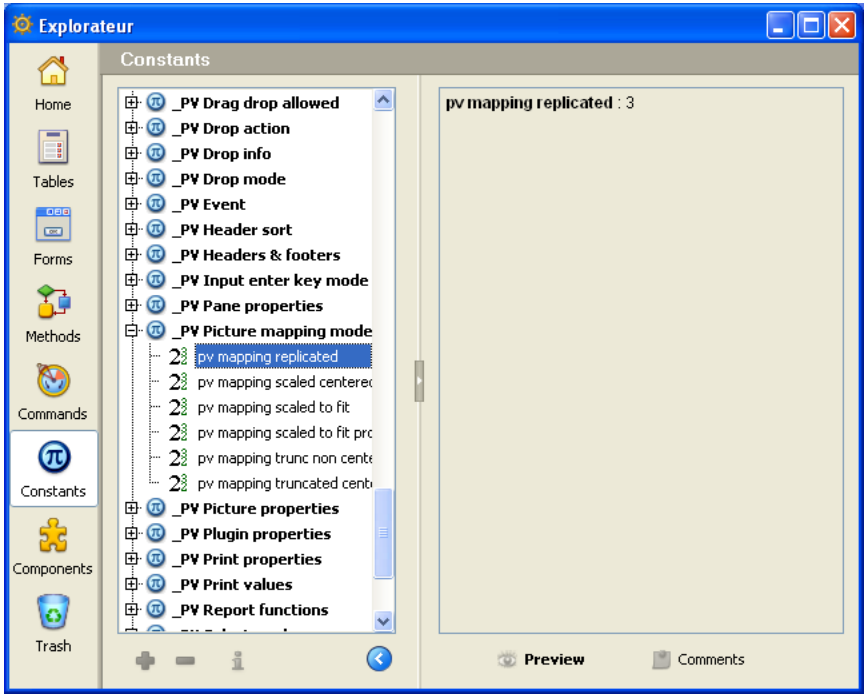
Plug-ins commands are grouped in “themes” in hierarchical lists:

You can insert a 4D View command in a method just as you do for any 4th Dimension command: you can either type it directly into the Method editor or double-click the command name in the list.

4D View routines can be used in any type of method: database, project, form, object, or trigger.

Constants in the Explorer

4D View constants are listed by theme in the 4D Explorer. Names of 4D View constants are preceeded by a "_" so that they are put at the end of the list.



To insert a 4D View constant in a method, enter it in the method editor window or drag and drop it from the 4D Explorer.

You can use programming in the following 4D View environments:

- 4D View areas included in forms
- 4D View external windows
- Off-screen 4D View areas

To work in a 4D View document, you must either create a plug-in area in a form or open an external window.

To create a plug-in area in a form, draw it in the 4D form editor in the Design environment.

To open an external window, choose the **4D View** command from the **Tools** menu in the 4D User environment or execute the 4D command Open external window.

Other than visible areas, 4D View allows creating off-screen areas, in other words, invisible areas. For more information on this, refer to the "4D View offscreen areas" paragraph below.

4D View area references

Once a 4D View document has been modified using routines, its area identification will need to be specified. This identification is internal to 4D View and is generally located in a variable.

4D View uses variables to save included area pathnames, external windows and off-screen areas. To reference the area where you want to execute an operation, pass the variable containing the area identification as a parameter to the command or the function.

In command descriptions within this documentation, the Longint variable type identifying the 4D View document area is called area.

There are two types of area variables:

- Names of included areas
- Variables created for an external window or an off-screen area

Names of included areas

Once you create and name a 4D View area in a form, 4th Dimension considers the name of the 4D View area to be the variable referencing the area. For example, you would reference the "Sheet" area by specifying "Sheet" as the area parameter.

External windows and off-screen area IDs

Once you create an external windows or an off-screen area using the Open external window or PV New offscreen area functions, the area identification number sent back by the function must be saved in a variable. You can use this variable later to make a reference to the external window or off-screen area in other commands and functions. To save the value in a variable, place the variable name and the assignment operator (:=) to the left of the function in the line of code.

The following example creates an external 4D View window and saves the area identification number in the *MyArea* variable:

```
MyArea:=Open external window(30;30;350;450;8;"Sheet";"_4D View")
```

4D View plug-in areas in forms

A 4D View area can be placed in any form: most often, it is placed in an input form to work with documents, but also in output forms to display or print information 4D View uses the entire form or shares space with fields and other form elements.

You must use a "plug-in area" active object area with 4D View. A plug-in area is one of several types of active objects in 4th Dimension (other examples include buttons, entry areas, scroll areas, etc.)

You can also associate the plug-in area with a 4D field so that the contents of the area are saved with each save. Be careful, if you do not use automatic buttons such as **Validate** but rather the SAVE RECORD command, you will first have to execute PV Area to blob to transfer the content of the 4D View area content in the 4D field since the automatic save mechanism is not active.

For more information on creating 4D View areas in forms, refer to the 4D View *User* manual.

4D View external windows

Use the 4th Dimension Open external window function to open an external window and display a blank 4D View document.

Open external window opens a new window, displays the specified plug-in and returns an identification number for the area.

Below is an example of how to use Open external window. This instruction will open an external window and displays an empty 4D View document.

```
PvRefArea:=Open external window (50;50;350;450;8;"Spreadsheet"; "_4D View")
```

Use PvRefArea every time that you need to make reference to this document. For a complete description of the Open external window command, refer to the 4th Dimension *Language* manual.

4D View off-screen areas

A off-screen area is stored in memory: it is invisible to the programmer and user. It is generally useful in two cases: to modify a document before the user views it or for saving the document so that the user can go back to the original, if necessary.

4D View operations function faster in an off-screen area as the area does not need to be drawn.

Use the PV New offscreen area function to create an off-screen area.

Do not forget to delete the off-screen area after using it to free up used memory by using the PV DELETE OFFSCREEN AREA routine. If you close the database without having terminated all the off-screen areas, 4th Dimension will display an error message.

Accessing 4D View menu commands

4D View menu commands can be executed by programming. You can also check the status of a menu or menu commands from a method.

Each menu command is referenced by an integer. The code for menu commands is defined using the PV Commands constants theme. For example, the **File** menu commands are represented by the "pv cmd file..." constants and the **Edit** menu commands by the "pv cmd edit..." constants.

Menu command constants will not vary, even if changes are made in 4D View.

Cross-platform document management

4D View, like 4th Dimension and 4D Server, is cross-platform. In other words, a database using 4D View created under MacOS can be opened and used under Windows without any modification and vice-versa. Of course, these combinations are only possible if you have the right software versions (for more information, refer to the 4D Product Line installation manual).

However, managing cross-platform 4D databases and 4D View documents requires following certain guidelines related to differences between the MacOS and Windows operating systems.

MacOS/Windows document correspondence

The following table illustrates correspondence between MacOS and Windows files for standard 4D View documents.

Document	MacOS Type	Creator	Windows Extension
4D View document	4DPV	4DSP	.4PV
4D Calc document	4DC	4DSP	.4DC
SYLK 2.0 document	TEXT	4DSP	.TXT
Tabulated text	TEXT	4DSP	.TXT
HTML document	TEXT	4DSP	.HTM

4D View documents

The following guidelines are important to keep in mind:

• Under MacOS, 4D View uses the type and creator to recognize documents (for example, type 4DPV, creator 4DSP = 4D View document). To describe pathnames, the disk contains a name and the ":" symbol is used to separate folders (example: "MyDisk:Folder1:Folder2:MyBase").

• Under Windows, 4D View uses the extension to recognize documents (for example: extension .4PV = 4D View document). To describe pathnames, the disk has a letter and the “\” symbol is used to separate directories (for example: "D:\Directory1\Directory2\Mybase")

• A 4D View document created under MacOS and copied under Windows can open directly if it was saved with its extension. For example, the document "MyDoc" saved as "MyDoc.4PV", copied to PC, will be opened without any changes.

• A 4D View document created under Windows and copied under MacOS will open without any changes.

Templates

4D View manages templates in a totally transparent manner for the user under both MacOS and Windows client machines regardless of the server platform.

- If the server is under MacOS, the template will be named “AreaName_”.
- If the server is under Windows, the template will be named “AreaName_.4PV”.

2

PV Current cell

PV Current cell, Introduction

The commands in this theme allow "positioning" on a cell as well as changing the current cell in a given 4D View area. It also allows quitting the "edit" mode of the current cell in a 4D View area.

PV GET CURRENT CELL

version 6.8

PV GET CURRENT CELL (area; column; row)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	←	Active cell column number
row	Longint	←	Active cell row number

Description

The command PV GET CURRENT CELL returns the coordinates of the current cell of area in the column and row parameters.

Example

Starting from the object callback of a button, display the string "Here" in the current cell.

```
   C_LONGINT($Column;$Row)  `To get coordinates

⇒  PV GET CURRENT CELL (Area;$Column;$Row)  `Cell coordinates

   If ($Column#0) & ($Row#0)  `There is a cell selected
      PV SET CELL STRING VALUE (Area;$Column;$Row;"Here")
         `This cell currently contains "Here"
   End if
```

See Also

PV GOTO NEXT CELL, PV VALIDATE CURRENT CELL.

PV VALIDATE CURRENT CELL

PV Current cell

version 6.8

PV VALIDATE CURRENT CELL (area)

Parameter	Type		Description
area	Longint	→	4D View area

Description

The PV VALIDATE CURRENT CELL command validates the contents of the current cell while in entry mode. The current cell remains the same.

This command can only be called from a callback method. For more information on callback methods, refer to the PV Area, Introduction section.

Example

Start by installing the callback method *EventMethod*, which will be called on double click:

```
PV ON EVENT (Area;pv on double clicked;"EventMethod")
```

This method intercepts the user's double-click:

```
   `EventMethod method
C_LONGINT($1)  `4D View area reference
C_LONGINT($2)  `Event
C_LONGINT($3)  `Modifying key code
C_LONGINT($4)  `Column number
C_LONGINT($5)  `Row number
C_LONGINT($6)  `Ascii code of the key
C_BOOLEAN($0)  `Value to return

$0:=False

If ($2=pv on double clicked)  `In case "EventMethod" will also be called for other events
   BEEP
⇒  PV VALIDATE CURRENT CELL ($1)  `Cell contents are validated
End if
```

See Also

PV ON EVENT.

PV GET NEXT FREE CELL

version 6.8

PV GET NEXT FREE CELL (area; direction; column; row)

Parameter	Type		Description
area	Longint	→	4D View area
direction	Integer	→	Direction constant
column	Longint	←	Column number
row	Longint	←	Row number

Description

The PV GET NEXT FREE CELL command gets the column and row coordinates in the next free cell in the specified direction.

The direction axe is one of four values of the PV Directions constant theme: right, bottom, left or top.

Example

In your 4D View area, containing an array of entered data (entirely filled), let's count the number of rows and columns occupied in this array.

We know that the first cell entered is located where column C and row 4 intersect. At the present, the plug-in will determine the number of columns and rows occupied by the entry range.

```
C_LONGINT($StartCol;$StartRow)  `Original cell coordinates
C_LONGINT($RightCol;$RightRow)  `Right-most coordinates
C_LONGINT($LowCol;$LowRow)  `Lowest coordinates
$StartCol:=3  `Initialization
$StartRow:=4
PV GOTO CELL (Area;$StartCol;$StartRow)  `Positioning

   `Get right-most coordinates
⇒  PV GET NEXT FREE CELL(Area;pv to the right;$RightCol;$RightRow)
   `Get lowest coordinates
⇒  PV GET NEXT FREE CELL(Area;pv to the bottom;$LowCol;$LowRow)

ALERT("The entered data occupies "+String($RightCol$StartCol+1)+" column(s) on "
                                  +String($LowCol$StartRow+1)+" row(s).")
```

See Also

PV GOTO CELL, PV GOTO NEXT CELL.

Constants

PV Directions theme.

PV GOTO CELL

version 6.8

PV GOTO CELL (area; column; row)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number

Description

When the command PV GOTO CELL is called, the cell defined by column and row becomes the current cell of the area. If the previous current cell was in entry mode, its contents are validated.

Example

This line of code makes the cell located at the intersection of the eighth column and the fifth row the current cell.

```
⇒ PV GOTO CELL (Area;8;5)  `New current cell: H5
```

See Also

PV GOTO NEXT CELL.

PV GOTO NEXT CELL (area; direction)

Parameter	Type		Description
area	Longint	→	4D View area
direction	Integer	→	Direction constant

Description

When the command PV GOTO NEXT CELL is called, the next cell in the specified direction parameter becomes the current cell of the area. If the previous current cell was in entry mode, its contents are validated.

The direction axe is one of four values of the PV Directions constant theme: right, bottom, left, or top.

Example

Imagine a spreadsheet where we have to put the cell corresponding to the "Total Amount" of a bill in bold type:

```
   C_LONGINT(Column;Row)  `Current cell coordinates

   PV FIND ALL (Area;"Total Amount";1;0)  `Find cell containing "Total Amount"
⇒  GOTO NEXT CELL (Area; pv to the right)  `Cell containing the value
   PV GET CURRENT CELL (Area;$Column;$Row)  `Get coordinates

      `Make selected cell in bold
   PV SET CELL PROPERTY (Area;$Column;$Row;pv style text bold;pv value on)
```

See Also

PV GET CURRENT CELL, PV GOTO CELL.

Constants

PV Directions theme.

PV GET PREVIOUS ACTIVE CELL

PV Current cell

version 6.8

PV GET PREVIOUS ACTIVE CELL (area; column; row)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	←	Cell column number
row	Longint	←	Cell row number

Description

The command PV GET PREVIOUS ACTIVE CELL returns the coordinates for the preceding active (current) cell for the indicated area in the column and row parameters.

Note: There is no “stack” for current cells, only the preceding cell is known, unlike cells that were first current. It is up to you to manage the memorization of successive current cells if necessary, for example, to install various levels of cancellation.

Example

In the example below, we will create a "rebound" effect for a given cell. Put an event management method into place, which will be called every time the active cell changes:

```
PV ON EVENT(Area;pv on active cell changed;"EventMethod")
```

This project method *EventMethod* causes the user to "bounce" to cell C5. Once this cell has been reached, it is the last current cell that becomes active again, forbidding C5 from being selected by any means: 4D View command, key stroke, mouse, etc.

```
   `Method: EventMethod
   `With this method, we will "bounce" to cell C5
C_LONGINT ($1)  `4D View area reference
C_LONGINT ($2)  `Évent
C_LONGINT ($3)  `Modification key code
C_LONGINT($4)  `Column number
C_LONGINT($5)  `Row number
C_LONGINT($6)  `Ascii code of the key
C_LONGINT ($Column;$Row)  `Cell coordinates (current then previous)
C_BOOLEAN($0)  `Value to return
$0:=False
PV GET CURRENT CELL ($1;$Column;$Row)  `Get coordinates
If ($Column=3) & ($Row=5)  `Cell C5 is current
⇒     PV GET PREVIOUS ACTIVE CELL ($1;$Column;$Row)  `Last cell
   PV GOTO CELL ($1;$Column;$Row)  `Becomes current again
End if
```

See Also

PV GOTO CELL, PV ON ERROR.

3

PV Area

PV Area, Introduction

version 6.8

The routines of this theme allow managing off-screen areas and external areas displayed in forms. The allow you to create or erase an off-screen area, to paste the content of a field or a BLOB variable in an external area or off-screen, or to save a 4D View area in a field or a BLOB variable.

Additionally, this theme gathers commands allowing the programmer to intercept different types of events detected by a 4D View area, to build their own error manager and also manage 4D View commands accessible using menus or palettes.

Callback methods
In this theme, several commands make reference to the "callback" concept: this mechanism is used here to link a method to an event, error or 4D View command. Every time 4D View detects an event, error or the activation of a menu command, the 4D project method defined by the area settings is executed: in this context, this method is called a "callback method".

The PV Area theme commands that make reference to callback methods are:

- PV ON EVENT
- PV ON COMMAND
- PV ON ERROR
- PV Get on event method
- PV Get on command method
- PV Get on error method

PV New offscreen area

PV Area

version 6.8

PV New offscreen area → Longint

Parameter	Type		Description
This command does not require any parameters			
Function result	Longint	←	4D View area

Description

The PV New offscreen area command builds a 4D View area in memory and returns the reference to this area. This reference should be passed in any 4D View command requiring a reference to an area.

When you no longer need the area, do not forget to clear it using the PV DELETE OFFSCREEN AREA command in order to free the space occupied in memory by the area.

Example

This method allows copying the content of a template so that you can copy it in your screen area.

```
     C_LONGINT($OffscreenArea)  `Offscreen area reference

     QUERY([Model];[Model]Ref="MyModel")  `Find the desired template
⇒    $OffscreenArea:=PV New offscreen area  `Create an offscreen area
        `Get template
     PV BLOB TO AREA ($OffscreenArea;[Model]BlobField_)
     PV SELECT RANGE ($OffscreenArea;1;1;3;3;pv selection set)
     PV EXECUTE COMMAND ($OffscreenArea;pv cmd edit copy)  `Copy selection
⇒    PV DELETE OFFSCREEN AREA ($OffscreenArea)  `Free memory
     PV GOTO CELL (Area;1;5)
     PV EXECUTE COMMAND (Area;pv cmd edit paste)  `Paste selection in active area
```

See Also

PV BLOB TO AREA, PV DELETE OFFSCREEN AREA.

PV DELETE OFFSCREEN AREA

PV Area

version 6.8

PV DELETE OFFSCREEN AREA (area)

Parameter	Type		Description
area	Longint	→	4D View area

Description

The command PV DELETE OFFSCREEN AREA deletes a 4D View area built using the PV New offscreen area command.

The area to be deleted can only be an offscreen area, in other words, an area that is not in a form. The area must be deleted after it was created using PV New offscreen area so as not to saturate system memory. If you forget to delete any offscreen areas, 4D View will alert you upon exiting 4D.

Example

See the example for the PV New offscreen area command.

See Also

PV New offscreen area.

PV SET AREA PROPERTY

PV Area

version 2004 (Modified)

PV SET AREA PROPERTY (area; property; value)

Parameter	Type		Description
area	Longint	→	4D View area
property	Longint	→	Property number
value	Longint	→	Property value

Description

The PV SET AREA PROPERTY command sets the value of the property for the specified 4D View area.

Only the properties preferences of areas displayed on screen—present in a form, associated with a field or not — are saved:
• They are loaded every time a form containing the area is opened,
• They are saved every time the area is closed.
• They can be located on the client or the server.

If area is set to 0, the PV SET AREA PROPERTY command will be applied to all new 4D View areas. In this case, it is better to call it using the On Startup Database Method, executed when the database is opened.

The PV Area properties constants are used to define the property parameter. To define the value parameter, use the appropriate constant themes or pass a specific value. The following list details each PV Area properties constant and the corresponding value parameters:

pv select mode

Allows setting of the selection actions allowed for the area. Associated values: constants of the PV Select mode theme.
• pv select not allowed: No selection is possible in the area (all cells are deselected). Data entry is also not allowed (the formula editor is locked). Data can only be viewed.
• pv select single row: Only one row at a time can be selected in the area.
• pv select adjacent rows: Only adjacent rows can be selected in the area.
• pv select multiple rows: Multiple rows, adjacent or not, can be selected in the area.
• pv select single column: Only one column at a time can be selected in the area.
• pv select adjacent columns: Only adjacent columns can be selected in the area.
• pv select multiple columns: Multiple columns, adjacent or not, can be selected in the area.

• pv select single cell: Only one cell at a time can be selected in the area.
• pv select adjacent cells: Only adjacent cells can be selected in the area.
• pv select multiple cells: Multiple cells, adjacent or not, can be selected in the area.

Note: Data entry remains possible in the selection (except during the use of the pv select not allowed constant). If you want to forbid all data entry in the area, you must, furthermore, execute the statement PV SET AREA PROPERTY(area;pv input trigger;pv trigger none).

pv select highlight

Allows setting of the highlighting for cell selections in the area. Associated values: pv value on or pv value off.
• pv value on: Selections are highlighted in the area.
• pv value off: Selections are not highlighted, they are then invisible on screen.

pv select null

To allow (or not) areas without a current selection. Associated values: pv value on or pv value off.
• pv value on: A selection is not mandatory in the area. For example, if the column or row containing the current active cell is deleted, there is no longer any selection in the area.
• pv value off: A selection is mandatory in the area.

pv current cell highlight

Allows setting of the highlighting for the current cell in the area. Associated values: pv value on or pv value off.
• pv value on: The current cell is highlighted in the area, it is therefore visible on screen.
• pv value off: The current cell is not highlighted in the area, it is therefore invisible on screen.
By default, the active cell is highlighted.

pv show selection

Allows setting or getting the selection display mode in a 4D View area not having the focus. Associated values: pv value on or pv value off.
• pv value on : the selection of the area always remains visible (highlighted) whether or not the 4D View area has the focus.
• pv value off : when the 4D View area loses the focus, the selection is no longer visible.

pv resizable columns

To allow (or not) column resizing. Associated values: pv value on or pv value off.
• pv value on: Columns in the area are resizable.
• pv value off: Columns in the area are not resizable.

pv resizable rows

To allow (or not) row resizing. Associated values: pv value on or pv value off.
• pv value on: Rows in the area are resizable.
• pv value off: Rows in the area are not resizable.

pv input trigger

Allows setting of the input trigger(s) in the area. Data entry can only be carried out in the current active cell. Associated values: constants of the PV Triggers theme.
• pv trigger none: Data entry is deactivated (no event will trigger input), even if a key is allowed in the data input mode (see constant pv input enter key mode). Data entry is, however, still possible using the Formula Editor toolbar, and the selection may be changed as well.
• pv trigger input key: Data entry is triggered by any keystroke. In this case, browsing between cells is only possible using the keyboard (Tab and Shift+Tab to move horizontally, Carriage return and Shift+Carriage return to move vertically, or the arrow keys).
• pv trigger input on enter: Data entry is triggered by the Enter key (numerical keypad).
• pv trigger input on gain sel: Data entry is triggered in the cell which has the focus. In this mode, as soon as a cell is selected, it takes the focus and the cursor becomes an input cursor.
• pv trigger on click: Data entry is triggered by a click in a cell. Unlike the pv trigger input on gain sel constant, no input cursor is displayed.
• pv trigger on double click: Data entry is triggered by a double-click in a cell. A single click does not permit input.
• pv trigger on alt click: Data entry is triggered by a Alt+click combination in a cell.
• pv trigger on alt double click: Data entry is triggered by a Alt+double-click combination in a cell.
• pv trigger on ctrl click: Data entry is triggered by a Ctrl+click (Command+click on Mac OS) combination in a cell.
• pv trigger on ctrl double click: Data entry is triggered by a Ctrl+double-click (Command+double-click on Mac OS) combination in a cell.
• pv trigger on shift click: Data entry is triggered by a Shift+click combination in a cell.
• pv trigger on shift double clic: Data entry is triggered by a Shift+double-click combination in a cell.

Notes
• You can add several constants for the same trigger. For example, PV SET AREA PROPERTY(area; pv input trigger;pv trigger on click + pv trigger on alt click) allows the use of a click OR an Alt+click for data entry.
• When the same trigger is defined for both input and selection, the input trigger has priority.

pv select trigger

Allows setting of the selection trigger(s) in the area. Associated values: constants of the PV Triggers theme.
• pv trigger none: Selection is not allowed in the area. It is still possible to enter data in the selection that was current before the command is executed—Tab and Carriage return keys move the active cell within the selection.
• pv trigger select on arrow: Selection is defined (active cell only) using the arrow keys. Extending or reducing a selection is not possible.
• pv trigger select on tab: Selection is defined (active cell only) using the Tab key or the Shift+Tab key combination. Extending or reducing a selection is not possible.
• pv trigger select on return: Selection is defined (active cell only) using the Carriage Return key. Extending or reducing a selection is not possible.
• pv trigger on click: Selection is defined via mouse clicks.
• pv trigger on double click: Selection is defined (active cell only) via mouse double-clicks. Extending or reducing a selection is not possible.
• pv trigger on alt click: Selection is defined using the Alt+click combination.
• pv trigger on alt double click: Selection is defined using the Alt+double-click combination.
• pv trigger on ctrl click: Selection is defined using the Ctrl+click combination (Command+click on Mac OS).
• pv trigger on ctrl double click: Selection is defined using the Ctrl+double-click combination (Command+double-click on Mac OS).
• pv trigger on shift click: Selection is defined using the Shift+click combination.
• pv trigger on shift double clic: Selection is defined using the Shift+double-click combination.

Notes :
• You can add several constants for the same trigger. For example, PV SET AREA PROPERTY(area; pv select trigger;pv trigger on click + pv trigger on alt click) allows the use of a click OR an Alt+click for the selection.
• When the same trigger is defined for both input and selection, the input trigger has priority.
• When the same trigger is defined for both drag and selection, the drag trigger has priority.

pv carriage return

Allows the creation of new lines in a cell (multi-line cells). Associated values: constants of the PV Carriage return theme.
• pv cr not allowed: Multi-line data entry is not allowed in the area.
• pv cr allowed: Pressing the Carriage Return key will create a new line in the cell.
• pv cr allowed with ctrl: Pressing Ctrl+Carriage Return (Command+Carriage Return on Mac OS) will create a new line in the cell.
• pv cr allowed with shift: Pressing Shift+Carriage Return will create a new line in the cell.

pv arrow keys

Allows defining the use of the arrow keys to validate data entry (validation and selection of the next cell). The validation is carried out only when the cursor is placed at the beginning or end of the cell content. Associated values: constants of the PV Arrow keys theme.
• pv arrow keys allowed: Allows the use of all arrow keys.
• pv top and bottom arrow keys: Allows only the use of top and bottom arrow keys.
• pv right and left arrow keys: Allows only the use of right and left arrow keys.
• pv arrow keys not allowed: Does not allow the use of arrow keys for data validation.

pv vert pane count

Allows the reading of the number of vertical panes in the area. This constant can only be read using the PV Get area property command. Returned values: pane count.

Reminder: A pane is the area located between two splitters (a splitter can be horizontal or vertical).

pv hor pane count

Allows the reading of the number of horizontal panes in the area. This constant can only be read using the PV Get area property command. Returned values: pane count.

pv drag trigger

Allows the definition of the drag trigger in the area. There is no specific trigger for the drop. Associated values: constants of the PV Triggers theme.
• pv trigger none: Dragging is not allowed in the area.
• pv trigger on click: The selection can be dragged using a mouse click.
• pv trigger on double click: The selection can be dragged using a mouse double-click.
• pv trigger on alt click: The selection can be dragged using an Alt+click combination.
• pv trigger on alt double click: The selection can be dragged using an Alt+double-click combination.
• pv trigger on ctrl click: The selection can be dragged using a Ctrl+click combination (Command+click on Mac OS).
• pv trigger on ctrl double click: The selection can be dragged using a Ctrl+double-click combination (Command+double-click on Mac OS).
• pv trigger on shift click: The selection can be dragged using a Shift+click combination.
• pv trigger on shift double clic: The selection can be dragged using a Shift+double-click combination.

Note: When the same trigger is defined for both drag and selection, the drag trigger has priority.

pv drag allowed

Allows setting of the type of selection that can be dragged. Associated values: constants of the PV Drag drop allowed theme.
• pv DD not allowed: No selection can be dragged in the area—even if drag and drop is allowed.
• pv DD single cell: Single cell selections can be dragged.
• pv DD adjacent cells: Multiple adjacent cells or a single-cell selection can be dragged.
• pv DD multiple cells: Multiple cells (adjacent or not) or a single-cell selection can be dragged.
• pv DD single row: Single row selections can be dragged.
• pv DD adjacent rows: Multiple adjacent rows or single row selections can be dragged.
• pv DD multiple rows: Multiple rows (adjacent or not) or a single-row selection can be dragged.
• pv DD single column: Single column selections can be dragged.
• pv DD adjacent columns: Multiple adjacent columns or a single-column selection can be dragged.
• pv DD multiple columns: Multiple columns (adjacent or not) or a single-column selection can be dragged.

Note: You can add several constants for the same area. For example, PV SET AREA PROPERTY(area; pv drag allowed;pv DD multiple cells + pv DD single column + pv DD adjacent rows) allows dragging of a selection containing either multiple cells or a single column or adjacent rows.

pv drop mode

Allows setting of how a dragged selection can be dropped in the area. Note that this property only defines the way in which the dragged values will be pasted into the drop area; the copy of the dragged values (if any) must be managed separately. Associated values: constants of the PV Drop mode theme.
• pv drop insert or replace: Dropped values can be inserted or replace existing values in the area.
• pv drop insert only: Dropped values can only be inserted in the area.
• pv drop replace only: Dropped values can only replace existing values in the area.

pv drop allowed

Allows setting of the type of selection which can be dropped in the area. Associated values: constants of the PV Drag drop allowed theme.
• pv DD not allowed: No selection can be dragged in the area—even if drag and drop is allowed.
• pv DD single cell: Single cell selections can be dropped.
• pv DD adjacent cells: Multiple adjacent cells or a single-cell selection can be dropped.
• pv DD multiple cells: Multiple cells (adjacent or not) or a single-cell selection can be dropped.
• pv DD single row: Single row selections can be dropped.
• pv DD adjacent rows: Multiple adjacent rows or single row selections can be dropped.

• pv DD multiple rows: Multiple rows (adjacent or not) or a single-row selection can be dropped.
• pv DD single column: Single column selections can be dropped.
• pv DD adjacent columns: Multiple adjacent columns or a single-column selection can be dropped.
• pv DD multiple columns: Multiple columns (adjacent or not) or a single-column selection can be dropped.
• pv DD 4D objects: 4D objects can be dropped. All types of 4D fields (except for BLOBs and sub-tables) and variables (except for BLOBs) can be dropped.

Note: You can add several constants for the same area. For example, PV SET AREA PROPERTY(area; pv drop allowed;pv DD multiple cells + pv DD single column + pv DD adjacent rows) allows the dropping of a selection containing either multiple cells or a single column or adjacent rows.

pv input enter key mode

Allows setting of the action of the Enter key (numeric keypad) when pressed during data entry. Associated values: constants of the PV Input enter key mode theme.
• pv enter key standard: The Enter key validates the current cell then switches between selection/data entry in the same cell (the current cell does not change).
• pv enter key as tab: The Enter key validates the current cell then switches between selection/data entry in the next cell to the right. The Shift+Enter key combination switches between selection/data entry in the next cell to the left.
• pv enter key as return: The Enter key validates the current cell then switches between selection/data entry in the next cell below. The Shift+Enter key combination switches between selection/data entry in the next cell above.

Note: Unlike the Enter key, the Tab and Carriage Return keys only select cells.

pv record tag

Allows setting of the record separator. This property is useful for data import/export only.
Associated values: character ASCII code.
Example : "E1Field1", "E1Field2", "E1Field3"; "E2Field4", "E2Field5";
The semicolon is the record separator (2 records: E1 and E2).

pv field tag

Allows setting of the field separator. This property is useful for data import/export only.
Associated values: character ASCII code.
Example : "E1Field1", "E1Field2", "E1Field3"; "E2Field4", "E2Field5";
The comma is the field separator.

pv field wrapper

Allows setting of the field wrapper. This property is useful for data import/export only.
Associated values: character ASCII code.
Example : "E1Field1", "E1Field2", "E1Field3"; "E2Field4", "E2Field5";
The quotes are the field wrappers.

pv copy hidden

Allows the setting of whether the hidden elements included in the area must be taken into account when cells are copied. Associated values: pv value on or pv value off.
• pv value on: Hidden elements (if any) are taken into account when cells are copied.
• pv value off: Hidden elements (if any) are not taken into account when cells are copied.

pv headers sort

Lets you allow or forbid the standard sorting of data when a column header is clicked (dynamic or static data). Associated values: Constants of the PV Header sort theme.
• pv sort not allowed (default value): 4D View does not carry out a standard sort when the user clicks on a column header (the sort can nevertheless be managed by the developer in a customized manner).
• pv sort allowed: 4D View carries out a standard sort when the user clicks on a column header. In this case, a symbol appears in the header in order to indicate the sort order. Successive clicks cause alternating ascending and descending sorts.
Sorting a dynamic column produces a synchronized sort of the other columns so that the records always remain in their initial state. A sort on a static column only sorts that column.

pv column headers height

Allows setting or reading of the column headers' height in the area. Associated values: headers' height (in pixels).

pv row headers width

Allows setting or reading of the row headers' width in the area. Associated values: headers' width (in pixels).

pv show column headers

Allows showing or hiding of the area column headers. Associated values: pv value on or pv value off.
• pv value on: Column headers are shown.
• pv value off: Column headers are hidden.

pv show row headers

Allows showing or hiding of the area row headers. Associated values: pv value on or pv value off.
- pv value on: Row headers are shown.
- pv value off: Row headers are hidden.

pv show menu bar

Allows showing or hiding of the 4D View Menu bar in the area. Associated values: pv value on or pv value off.
- pv value on: The Menu bar is shown.
- pv value off: The Menu bar is hidden.

pv show standard toolbar

Allows showing or hiding of the 4D View Standard toolbar in the area. Associated values: pv value on or pv value off.
- pv value on: The Standard toolbar is shown.
- pv value off: The Standard toolbar is hidden.

pv show numbers toolbar

Allows showing or hiding of the 4D View Numbers toolbar in the area. Associated values: pv value on or pv value off.
- pv value on: The Numbers toolbar is shown.
- pv value off: The Numbers toolbar is hidden.

pv show style toolbar

Allows showing or hiding of the 4D View Style toolbar in the area. Associated values: pv value on or pv value off.
- pv value on: The Style toolbar is shown.
- pv value off: The Style toolbar is hidden.

pv show borders toolbar

Allows showing or hiding of the 4D View Borders toolbar in the area. Associated values: pv value on or pv value off.
- pv value on: The Borders toolbar is shown.
- pv value off: The Borders toolbar is hidden.

pv show formula toolbar

Allows showing or hiding of the 4D View Formula toolbar in the area. Associated values: pv value on or pv value off.
- pv value on: The Formula toolbar is shown.
- pv value off: The Formula toolbar is hidden.

pv show hor grid

Allows showing or hiding of the 4D View horizontal grid within the area. Associated values: pv value on or pv value off.
• pv value on: The horizontal grid is shown.
• pv value off: The horizontal grid is hidden.

pv show vert grid

Allows showing or hiding of the 4D View vertical grid within the area. Associated values: pv value on or pv value off.
• pv value on: The vertical grid is shown.
• pv value off: The vertical grid is hidden.

pv show hor scrollbar

Allows showing or hiding of the 4D View horizontal scrollbar within the area. Associated values: pv value on or pv value off.
• pv value on: The horizontal scrollbar is shown.
• pv value off: The horizontal scrollbar is hidden.

pv show vert scrollbar

Allows showing or hiding of the 4D View vertical scrollbar within the area. Associated values: pv value on or pv value off.
• pv value on: The vertical scrollbar is shown.
• pv value off: The vertical scrollbar is hidden.

pv zoom factor

Allows setting or reading of the zoom value (in percent) for the area. Associated values: zoom rate included between 25 and 1000.

pv saving dialog

Allows displaying (or not) of the Save document confirmation alert when a 4D View document which has been modified is closed. This alert is displayed when a 4D View included area—not associated with a database field— is exited (the form is validated or canceled). This property is not valid for external 4D View windows. Associated values: pv value on or pv value off.
• pv value on: The confirmation alert is displayed (default value).
• pv value off: The confirmation alert is not displayed.

pv allow undo redo

Allows (or not) the use of the undo function. Associated values: pv value on or pv value off.
• pv value on: The undo functionality is on (default value).
• pv value off: The undo functionality is off (the Undo command of the Edit menu is inactive).

Example

To freeze column size in a 4D View area or to authorize resizing if this function is frozen, we will write the following method which will carry out the "switch":

```
C_INTEGER($Value)  `Property value

   `Current value (0: froze, 1 = authorized)
$Value:=PV Get area property (Area;pv resizable columns)
   `Switching command : 0 ↔ 1
⇒  PV SET AREA PROPERTY (Area;pv resizable columns;Num($Value=0))
```

See Also

PV Get area property.

Constants

PV Area properties, PV Select mode, PV Header sort, PV Triggers, PV Carriage return, PV Drag drop allowed, and PV Input enter key mode constant themes.

PV Get area property

PV Area

version 6.8

PV Get area property (area; property) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
property	Longint	→	Property number
Function result	Longint	←	Option value

Description

The command PV Get area property returns the property value of the 4D View area for the specified option.

The PV Area properties constants are used to define the property.

For more information on properties and their values, refer to the PV SET AREA PROPERTY command description.

Example

See the example for the PV SET AREA PROPERTY command.

See Also

PV SET AREA PROPERTY.

Constants

PV Area properties theme.

PV BLOB TO AREA

PV Area

version 6.8

PV BLOB TO AREA (area; blob)

Parameter	Type		Description
area	Longint	→	4D View area
blob	BLOB	→	Source BLOB

Description

The command PV BLOB TO AREA opens in area the 4D View spreadsheet saved in blob.

The area parameter can be a 4D View area present on the screen or offscreen.

Example

This first method (for example, the object method of a "copy" button) copies the content of an area to use it later, for example, after removing it or in another area:

```
C_BLOB(BlobVariable)  `Process variable receiving the area
BlobVariable:=PV Area to Blob (Area)  `Save in a variable
```

This second method (for example, the object method of a "paste" button) pasted the area content in a variable and places area information present on the screen:

```
⇒  PV BLOB TO AREA (Area;BlobVariable)  `Get from the variable
```

See Also

PV Area to blob.

PV Area to blob

version 6.8

PV Area to blob (area) → BLOB

Parameter	Type		Description
area	Longint	→	4D View area
Function result	BLOB	←	Destination BLOB

Description

The command PV Area to blob saves the area in a field or BLOB variable. This can then be saved in a field or manipulated using a variable of the same type.

The area parameter can be a 4D View area present on the screen or offscreen.

Example

See the example for the PV BLOB TO AREA command.

See Also

PV BLOB TO AREA.

PV ON EVENT

PV Area

version 2004.1 (Modified)

PV ON EVENT (area; event; method)

Parameter	Type		Description
area	Longint	→	4D View area
event	Longint	→	4D View event
method	String	→	Method name

Description

The PV ON EVENT command is used to link a method to a 4D View event. Every time event occurs, the method is executed.

The PV Event constants are used to define the event parameter.

The called method receives 6 Longint parameters and returns a Boolean in $0:
$1: The 4D View area reference
$2: The event
$3: Key modification code
$4: The column number
$5: The row number
$6: Ascii code of the key (if the event is a click, a right click or a double click, $6 is set to 0)

$3 can be set to one of the following values (these values are added if a key combination is pressed):

0	None
512	Shift key
2048	Alt key
4096	Ctrl key (Windows) / Command key (MacOS).

• **Click management** (pv on clicked, pv on right clicked, pv on double clicked and pv on contextual click events):
- If the event (click, right click, double click or contextual click) happens in a cell, $4 returns the column number and $5 returns the row number. If it happens on a row header, $4 is set to 0. If it happens on a column header, $5 is set to 0. If it happens in the upper left corner of the area, $4 and $5 are set to 0.
- The pv on contextual click event is called when the user releases the mouse button; whereas the pv on right clicked event is called when the button is pressed. These two events can be used to put an interface using pop-up contextual menus into place. The pv on contextual click event corresponds more with Windows operation and the pv on right clicked event with that of MacOS. The two events can be used simultaneously.
- If the event is a click, a right click, a double click or a contextual click, $6 is set to 0.

• **Change of selection** (pv on selection changed event):
- If the new selection includes several cells, columns or rows, $4 and $5 return 0.
- If the new selection includes a single cell, $4 and $5 return the column and row number of the cell, respectively.
- If the new selection is a column, $4 returns the column number and $5 returns 0.
- If the new selection is a row, $4 returns 0 and $5 returns the row number.

• **Function keys**: in the context of a pv on keyboard event, if a function key has been enabled, the parameter $6 returns 0. In this case, use the 4th Dimension system variable *Keycode* to find out the ASCII code of the enabled function key.

• **Sort**: The pv on column sort event is generated just after a column has been sorted. This way, it can be used to control user actions. In this case, $6 receives a value indicating the sort order. This value can be compared with the following constants, located in the PV Header sort theme:

pv ascending sort	Longint	2
pv descending sort	Longint	3

• **Resizing**: The pv on column resize and pv on row resize events are sent when a column or row is resized by the user. They are not sent if the columns or rows are resized by programming (using the PV SET COLUMNS WIDTH or PV SET ROWS HEIGHT commands).

If $0 is True, the event will not be taken into account.
If $0 is False, the event will be taken into account.

Note: If you intend to compile your database, you must declare $0 as Boolean and $1 to $6 as Longints even if some of them are not used.

If area is equal to 0, the PV ON EVENT command will be applied to all new 4D View areas. In this case, it is better to pass this command in the On Startup Database Method, which is executed when the database is opened.

To uninstall the on event method, simply call the PV ON EVENT command with an empty string in the last parameter.

Examples

(1) See the examples for the PV VALIDATE CURRENT CELL, PV GET PREVIOUS ACTIVE CELL, PV GET CELL FIELD, PV Get on event method, and PV SAVE DOCUMENT commands.

(2) The user clicks on the column header to carry out a sort. The *PM_Event* method is used to find out which column has been sorted and in what order.

```
   `Installation of the method that will be called during the pv on column sort event:
⇒  PV ON EVENT(area;pv on column sort;"PM_Event")

   `PM_Event method
C_BOOLEAN($0)
C_LONGINT($1; $2; $3; $4; $5; $6)
C_STRING(12; $SortOrder)
If ($2=pv on column sort)
   Case of
   :($6=pv ascending sort)
      $SortOrder:="ascending"
   :($6=pv descending sort)
      $SortOrder:="descending"
   End case
   ALERT ("The sort was carried out on the column "+String($4)+" in "+$SortOrder+"
                                                                        order)
End if
```

(3) A double-click on a column header causes the column to be resized. However, a double-click generates a sequence of two events: pv on clicked then pv on double clicked. As a result, if sorting has been allowed by a call to PV SET AREA PROPERTY, a double-click on a header first causes the sorting of the column, then its resizing. If you want a double-click to only cause resizing of the column, you must intercept and remove the pv on clicked event, which is generated just before the sort is carried out. To do this, simply install a method that will be called during the pv on clicked event:

```
   `Installation of the method that will be called during the pv on clicked event
⇒  PV ON EVENT(area;pv on clicked;"PM_Event")

   `PM_Event method
C_BOOLEAN($0)
C_LONGINT($1; $2; $3; $4; $5; $6)
If ($2=pv on clicked)
   $0:=True    `The event is ignored and the sort is not carried out
End if
```

See Also

PV Get on event method.

Constants

PV Event theme

PV Get on event method

PV Area

version 6.8

PV Get on event method (area; event) → String

Parameter	Type		Description
area	Longint	→	4D View area
event	Longint	→	4D View event
Function result	String	←	4D method name

Description

The command PV Get on event method returns the name of the method linked with the specified event callback.

The PV Event constants are used to define the events.

If no method has been linked to an event, PV Get on event method returns an empty string.

Example

It is wise to temporarily disable an on event call, and execute a process before re-establishing the original call.
Here is a simple method that generates this "disengagement" in a generic manner using PV Get on event method, for example, for the pv on cell value changed event:

```
C_STRING(32;$EventMethod)

   `Save the method that may be in place
⇒  $EventMethod:=PV Get on event method (Area;pv on cell value changed)

PV ON EVENT (Area;pv on cell value changed ;"") `Cancellation

   `... Put the process to execute here

PV ON EVENT (Area;pv on cell value changed;$EventMethod) `Restore
```

See Also

PV Get on command method, PV Get on error method, PV ON EVENT.

Constants

PV Event theme.

PV ON COMMAND

PV Area

version 6.8

PV ON COMMAND (area; command; method)

Parameter	Type		Description
area	Longint	→	4D View area
command	Longint	→	Command number
method	String	→	4D method name

Description

The command PV ON COMMAND links the 4D View menu command to a 4D method.

The PV Commands constants are used to define the command parameters.

The method receives 3 parameters:
$1: The 4D View area reference
$2: The menu command number
$3: The modifier key

To uninstall the on command method call, simply call the PV ON COMMAND command with an empty string in the third parameter.

Example

Take, for example, a database where all print jobs calling an included 4D View area must be traced. The proposed solution is written in several lines:

```
      If (PV Get on command method (area;(pv cmd print document)#"PrintMethod")
            `Record print formula trace
⇒        PV ON COMMAND (area;(pv cmd print document);"PrintMethod")
      End if

      If (PV Get on command method (area;(pv cmd print formulas)#"PrintMethod")
            `Record standard print trace
⇒        PV ON COMMAND (area;(pv cmd print formulas);"PrintMethod")
      End if
```

The code for method *PrintMethod* is as follows:

```
   `Method: PrintMethod.
C_LONGINT($1)  `4D View area reference
C_LONGINT($2)  `Menu command number
C_LONGINT($3)  `Modification key code

Case of
   : ($2=pv cmd print formulas)
      CREATE RECORD([PrintSpy])  `New record
      [PrintSpy]CurUser:=Current user  `Who requests print job?
      [PrintSpy]Dte:=Current date (*)  `Date of print
      [PrintSpy]Hre:= Current time  `Time of print
      [PrintSpy]Sujet:=Print area formulas
      SAVE RECORD([PrintSpy])  `Don't forget to validate creation

   : ($2=pv cmd print document)  `Is this a print request?
      CREATE RECORD([PrintSpy])  `New record
      [PrintSpy]CurUser:=Current user  `Who requests print job?
      [PrintSpy]Dte:=Current date (*)  `Date of print
      [PrintSpy]Hre:= Current time  `Time of print
      [PrintSpy]Sujet:=Standard area print
      SAVE RECORD([PrintSpy])  `Don't forget to validate creation

   Else
      TRACE  `Other cases?
End case
```

See Also

PV Get on command method.

Constants

PV Commands theme.

PV Get on command method

PV Area

version 6.8

PV Get on command method (area; command) → String

Parameter	Type		Description
area	Longint	→	4D View area
command	Longint	→	Command number
Function result	String	←	4D method name

Description

The command PV Get on command method returns the name of the method linked to the 4D View menu command.

The PV Commands constants are used to define the command parameter.

If no method has been linked, PV Get on command method returns an empty string.

Examples

See the example for the PV ON COMMAND command.

See Also

PV Get on error method, PV Get on event method, PV ON COMMAND.

Constants

PV Commands theme.

PV ON ERROR

PV Area

version 6.8

PV ON ERROR (method)

Parameter	Type		Description
method	String	→	4D View method

Description

The command PV ON ERROR installs the method to manage 4D View errors.

This interruption method is executed every time an error occurs during a 4D View command call, thereby allowing control of eventual execution errors.

The called method receives 3 parameters:

$1 : 4D View area reference
$2 : Error number
$3 : Error text

The numbers and the labels of errors generated by 4D View are provided in Appendix A, List of 4D View error codes.

To uninstall method, simply call the PV ON ERROR command with an empty string as a parameter.

Example

Install an error management method for the active 4D View area.

```
    If (PV Get on error method #"ErrMethMan")  `Manager not installed?
⇒       PV ON ERROR ("ErrMethMan")  `Call method
    End if
```

The code for the "ErrMethMan" is as follows :

```
    C_LONGINT ($1)  `4D View area reference
    C_LONGINT ($2)  `Error number
    C_TEXT ($3)  `Error text

    ALERT ("Internal error number "+String (ErrorNum)+Char (13)+ErrorText)
```

See Also

Appendix A, List of 4D View error codes, PV GET LAST ERROR, PV Get on error method.

PV Get on error method

PV Area

version 6.8

PV Get on error method → String

Parameter	Type		Description
This command does not require any parameters			
Function result	String	←	4D Method name

Description

The command PV Get on error method returns the name of the current error management method put into place with the PV ON ERROR command.

If no on error method call is set up, PV Get on error method returns an empty string.

Example

See the example for the PV ON ERROR command.

See Also

PV Get on command method, PV Get on event method, PV ON ERROR.

PV GET LAST ERROR

PV Area

version 6.8

PV GET LAST ERROR (area; errorCode; errorText)

Parameter	Type		Description
area	Longint	→	4D View area
errorCode	Longint	←	Error number
errorText	Text	←	Error description text

Description

The command PV GET LAST ERROR gets information on the last error for the specified 4D View area. If the area reference is equal to 0, the information will correspond to the last error received from all 4D View areas.

After execution of the command, errorCode receives the error number and errorText contains the detailed description of the corresponding error. The numbers and names of errors generated by 4D View are provided in Appendix A, List of 4D View error codes.

PV GET LAST ERROR only returns an error if the last call of a 4D View command for area provoked an error: any call to a command that does not provoke an error re-sets the last error to zero. To intercept and handle errors that may arise, use the PV ON ERROR command instead.
However, when you do not use the PV ON ERROR command, 4D View displays an alert dialog box to user in case of an error. It will then be possible to get the necessary information, for example in the 4D Debugger, using the PV GET LAST ERROR command.

Example

After loading values of a selection of records in a 4D View area, check to see if the available memory was sufficient to complete the operation without bogging it down. If not, offer the user a suggestion on how to fix this.

```
   C_LONGINT($ErrorCode) `Error number
   C_TEXT($ErrorText) `Text description of error
   PV FIELD TO CELLS (Area;1;1;1;0;Table(->[Clients]);Table(->[Clients]);
                                                   Field(->[Clients]FirstName))
   PV FIELD TO CELLS (Area;1;2;1;0;Table(->[Clients]);Table(->[Clients]);
                                                   Field(->[Clients]Name))
⇒  PV GET LAST ERROR  (Area;$ErrorCode;$ErrorText) `Was there an error?
   If ($ErrorCode=18) `Insufficient memory
      ALERT("Insufficient memory: decrease the selection to display or give "+
                                                   "4D more memory.")
   End if
```

See Also

Appendix A, List of 4D View error codes, PV ON ERROR.

PV EXECUTE COMMAND

PV Area

version 6.8

PV EXECUTE COMMAND (area; command)

Parameter	Type		Description
area	Longint	→	4D View area
command	Longint	→	Command number

Description

The command PV EXECUTE COMMAND executes in area the 4D View menu command whose number is passed in the command parameter.

PV Commands theme constants are used to define the command parameter.

Example

Below is a method that switches the vertical scrollbar to visible or hidden. The corresponding "Display" menu is also activated/deactivated for the "vertical scrollbar" row.

```
   C_INTEGER($status)  `1=enable 0=disable
   C_INTEGER($checkbox)  `0=unchecked, 1=checked
   C_STRING(30;$name)  `Name of the corresponding command

      `Get info
   PV GET COMMAND STATUS (Area;pv cmd view Vscrollbar;$status;$checkbox;$name)
   If ($checkbox=1)  `Is the vertical scrollbar visible?
⇒     PV EXECUTE COMMAND (Area;pv cmd view Vscrollbar)  `Hide it
      PV SET COMMAND STATUS (Area;pv cmd view Vscrollbar;0)  `Disable it
   Else
      PV SET COMMAND STATUS  (Area;pv cmd view Vscrollbar;1) `Activate the command
⇒     PV EXECUTE COMMAND (Area;pv cmd view Vscrollbar)  `Display scrollbar

      End if
   End it
```

See Also

PV GET COMMAND STATUS, PV SET COMMAND STATUS.

Constants

PV Commands theme.

PV SET COMMAND STATUS

PV Area

version 2004.1 (Modified)

PV SET COMMAND STATUS (area; command; status)

Parameter	Type		Description
area	Longint	→	4D View area
command	Longint	→	Command number
status	Integer	→	0 = Disable; 1 = Enable

Description

The PV SET COMMAND STATUS command enables or disables the menu command specified by command. These commands can be localized in menus (allow using 4D View menus using programming) or palettes. If you pass 0 in the command parameter, the command will modify the status of all 4D View menu commands.

• If status equals 0, the command will not be executed when called and the menu (or button) will be dimmed.
• If status equals 1, the command will be executed when called and the menu (or button) will be active.

A disabled menu command cannot be executed using programming with the PV EXECUTE COMMAND command.

PV ON COMMAND is also not available if the user tries to use a command disabled using PV SET COMMAND STATUS).

Examples

(1) To forbid displaying references in a 4D View area, simply write:

```
      `3rd parameter to 1 to re-enable
⇒     PV GET COMMAND STATUS (area;pv cmd view references;0)
```

(2) See the example for the PV EXECUTE COMMAND command.

See Also

PV EXECUTE COMMAND, PV GET COMMAND STATUS.

Constants

PV Commands theme.

PV GET COMMAND STATUS

PV Area

version 6.8

PV GET COMMAND STATUS (area; command; status; checkbox; name)

Parameter	Type		Description
area	Longint	→	4D View area
command	Longint	→	Command number
status	Integer	←	0 = Disable; 1 = Enable
checkbox	Integer	←	0 = Un-checked; 1 = Checked
name	String	←	Command name

Description

The command PV GET COMMAND STATUS gets the status, checkbox and name of the 4D View command name defined by command.

The command parameter corresponds to the number of the command whose information is desired. To define this parameter, use the PV Commands theme constants.

The status parameter returns the state of the command that will have either a value of 0 if the command is disabled or 1 if it is enabled.

The checkbox parameter indicates if the command is checked (value 1) or not (value 0).

The name parameter contains the label of the command.

Example

See the example for the PV EXECUTE COMMAND command.

See Also

PV EXECUTE COMMAND, PV SET COMMAND STATUS.

Constants

PV Commands theme.

PV REDRAW

PV Area

version 6.8

PV REDRAW (area)

Parameter	Type		Description
area	Longint	→	4D View area

Description

The command PV REDRAW is used to force the refresh of the 4D View area.

Example

Refer to the example for the PV SET COLUMNS WIDTH command, which demonstrates a resize exercise for rows and columns.

4

PV Borders

PV Borders, Introduction

The routines in this theme allow defining borders for a cell or a selection of cells, border attributes, or even obtaining information relative to a border type depending on the parameters set using menu commands.

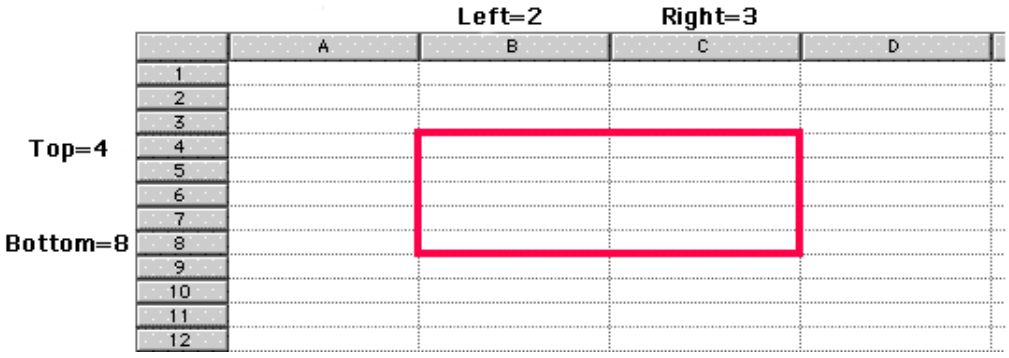
For more information on selection and cell ranges, refer to the PV Selection, Introduction section.

PV SET RANGE BORDER (area; left; top; right; bottom)

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint	→	Left cell column number
top	Longint	→	Top cell row number
right	Longint	→	Right cell column number
bottom	Longint	→	Bottom cell row number

Description

The command PV SET RANGE BORDER applies the border set using PV SET BORDER STYLE to the specified range of cells defined by the left, top, right, and bottom parameters:



For more information on ranges, refer to the PV Selection, Introduction section.

Example

In a 4D View area, we want to trace a light blue horizontal double-line at the bottom of a table containing 12 rows entered in columns A and B:

```
   PV SET BORDER STYLE (Area;pv border edge top;pv border style 111;
                                PV Index to color (Light blue))  `Border style and color
⇒  PV SET RANGE BORDER (Area;1;12;2;12) `Underline the bottom of the range
```

See Also

PV SET BORDER STYLE.

PV SET BORDER STYLE

PV Borders

version 2003 (Modified)

PV SET BORDER STYLE (area; edge; style; color)

Parameter	Type		Description
area	Longint	→	4D View area
edge	Longint	→	Border edge
style	Longint	→	Border style
color	Longint	→	Border color

Description

The command PV SET BORDER STYLE sets the style and color for the border edge.

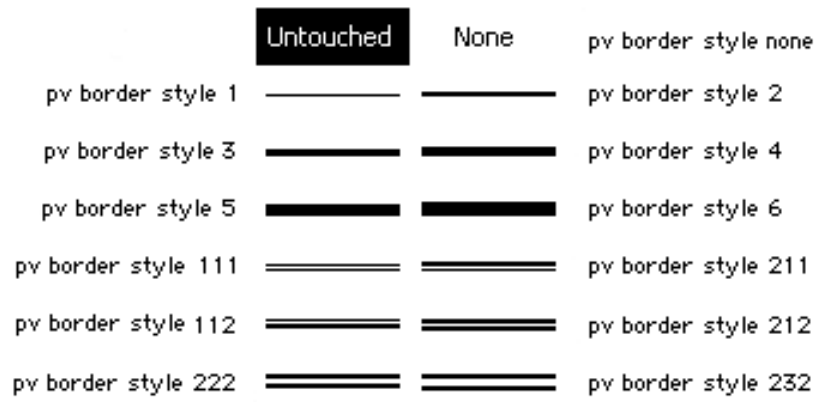
Note: This command does not apply to the style of area cells. It only defines styles which should then be applied using the PV SET RANGE BORDER style.

To define the edge parameter, use the PV Border edge constants. A border is defined as an edge (side) of a frame: upper, lower, left, right. To set several borders using a unique call to PV SET BORDER STYLE, simply add constants, for example pv border edge top + pv border edge bottom for a line above and below the frame.

Borders can be combined to form a partial or complete frame for a cell range. In this case, the inner border is the edge of each cell included in the frame and can be addressed using the pv border edge inner vert and pv border edge inner hor constants. Each border can also contain specific, unique characteristics: PV SET BORDER STYLE can be called as many times as there are borders needing to contain different styles.

To define the style parameter, use the PV Border style constants. These constants are defined as follows:
- For simple borders, the constant indicates the number of pixels (for example pv border style 4 = a line of 4 pixels).
- For combined borders, the constant indicates the number of pixels for each component (for example pv border style 211 = a line of 2 pixels, 1 space of 1 pixel, a line of 1 pixel).

These constants are detailed in the following illustration:



- The constants pv border style quarter and pv border style half are used to set or get a border size of respectively 0.25 pixels and 0.5 pixels. These values are only significant at the time of printing.

The color parameter is a RGB-type long integer. This value can be taken from one of the 256 colors of the 4D palette using the PV Index to color command: specifically, it is possible to use the constants of the 4D language, Colors theme, available for the first 16 colors (the first row of the color palette).
Refer to the description of the following 4D commands for details on the colors available in 4th Dimension:
• SET RGB COLORS for the system of RGB colors used by 4D.
• SET COLOR for the 4D palette of indexed colors.

Example

See the example for the PV SET RANGE BORDER command.

See Also

PV SET RANGE BORDER.

Constants

PV Border edge and PV Border style themes.

PV GET BORDER STYLE

PV GET BORDER STYLE (area; edge; style; color)

Parameter	Type		Description
area	Longint	→	4D View area
edge	Longint	→	Border edge
style	Longint	←	Border style
color	Longint	←	Border color

Description

The command PV GET BORDER STYLE gets the style and color for the border edge for the 4D View area.

To define the edge parameter, use the PV Border edge constants.

The value returned in the style is parameter is comparable to the PV Border style constants. For more information on the PV Border style theme constants, refer to the PV SET BORDER STYLE command.

Example

Verify that the border style in place for a data range corresponds to your liking (see PV SET BORDER STYLE). Note that we're not really bordering anything at all: the code below only allows modifying the settings of future borders done with the PV SET RANGE BORDER command.

```
   C_LONGINT($Style;$Color)  `Style attributes

      `Get style information
⇒  PV GET BORDER STYLE (Area;pv border edge bottom;$Style;$Color)

      `Is it the desired style?
   If (Style#pv  border style 111)  |  ($Color#PV Index to color (Light blue))  `Afraid not...
      PV SET BORDER STYLE (Area;pv border edge bottom;pv border style 111;
                                    PV Index to color (Light blue))  `Frame style and color
   End if
```

See Also

PV SET BORDER STYLE, PV SET RANGE BORDER.

Constants

PV Border edge and PV Border style themes.

5

PV Cell property

PV Cell property, Introduction

version 6.8

The commands of this theme allow defining or getting properties for a cell or a selection of cells: locking, hidden, display format, etc.

Three commands in this theme allow managing cell names: getting the list of existing names in a 4D View area or creating new names.
Naming cells makes managing them easier: for example, it is easier for the use and developer to have a pop-up menu available allowing positioning on the "Total" cell rather than on the cell located in column Y, row 384.

PV SET CELL PROPERTY

PV Cell property

version 2004 (Modified)

PV SET CELL PROPERTY (area; column; row; property; value)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
property	Longint	→	Property number
value	Longint	→	Property value

Description

The PV SET CELL PROPERTY command sets the value of the property defined in the column and row parameters.

To define property, you can use:
• the constants of the PV Cell properties theme. In this case, pass the height or width of the cell in pixels in the value parameter.
• the constants of the PV Style properties theme. In this case, to define the value parameter, use the constants of the PV Style values, PV Style special values, PV Style format date time or PV Picture mapping mode theme.

The following list describes the different constants used in the property parameter and the associated values:

PV Cell properties theme

pv cell width

Allows setting of cell width. Associated values: width expressed in pixels.

pv cell height

Allows setting of cell height. Associated values: height expressed in pixels.

PV Style properties theme

pv style locked

Allows setting of locking for the cell user. Locked cell contents can no longer be modified, selected, etc. Associated values: constants of the PV Style values theme.
• pv value on: cell locked.
• pv value off: cell not locked.

pv style hidden

Allows setting of cell locking and hiding. Locked and hidden cell contents are not displayed and can no longer be modified, selected, etc. Associated values: constants of the PV Style values theme.
• pv value on: cell locked and hidden.
• pv value off: cell not locked or hidden.

pv style spellcheck

Allows application of spellcheck for the cell. Associated values: constants of the PV Style values theme.
• pv value on: a spellcheck is applied to the cell.
• pv value off: no spellcheck is applied to the cell.

pv style use picture height

Allows adapting of cell size according to the picture height associated with it. Associated values: constants of the PV Style values theme.
• pv value on: cell size is adapted to the height of the picture it contains. If there is no picture associated with it, the cell is not resized.
• pv value off: cell size does not vary according to the picture height associated with it.

pv style based on

The cell uses, as a model, the style sheet whose number is passed in the value parameter. Associated values: style sheet numbers or constants of the PV Style special values theme.

pv style format alpha

The cell uses the text display format whose number is passed in the value parameter. Associated values: display format numbers.

pv style format num

The cell uses the number display format whose number is passed in the value parameter. Associated values: display format numbers.

Note: Default display format numbers correspond to their position in the menu used for selecting formats in the cell Format dialog box.

pv style format bool

The cell uses the Boolean display format whose number is passed in the value parameter. Associated values: display format numbers.

pv style format date time

The cell uses the date and time display format whose number is passed in the value parameter. Associated values: constants of the PV Style format date time theme.
- pv Short: 02/21/02
- pv Abbreviated: thu 21 feb 2002
- pv Long: thursday 21 february 2002
- pv Short2: 02/21/2002
- pv Month Day Year: 21 february, 2002
- pv Abbr Month Day Year: 21 feb, 2002
- pv Day Name: thursday
- pv Day Number: 21
- pv Month Name: february
- pv Month Number: 2
- pv Year Number: 2002
- pv Long H MM AM PM: thursday 21 february 2002 at 12:30 PM
- pv Abbreviated H MM AM PM: thu 21 feb 2002 at 12:30 PM
- pv Short HH MM SS: 02/21/02 at 12:30:00
- pv Month Day Year H MM AM PM: 21 february, 2002 at 12:30 PM
- pv Short2 Hour Min Sec: 21/02/2002 and 12 hours 30 minutes 0 second
- pv HH MM SS: 12:30:00
- pv HH MM: 12:30
- pv Hour Min Sec: 12 hours 30 minutes 0 second
- pv Hour Min: 12 hours 30 minutes
- pv HH MM AM PM: 12:30 PM

Note: Depending on your current System settings, the resulting display can be different.

pv style format picture

Allows definition of the picture display format associated with the cell. Associated values: constants of the PV Picture mapping mode theme.
- pv mapping trunc non-centered
- pv mapping truncated centered
- pv mapping replicated
- pv mapping scaled to fit prop
- pv mapping scaled to fit
- pv mapping scaled centered prop

pv style color back even

Allows setting of the cell background color if it is located on an even-numbered line. Associated values: color numbers (see the PV RGB to color and PV Index to color commands) or pv value none (PV Style Values theme) to set no color.

pv style color back odd

Allows setting of the cell background color if it is located on an odd-numbered line. Associated values: color numbers (see the PV RGB to color and PV Index to color commands) or pv value none (PV Style Values theme) to set no color.

pv style color text even

Allows setting of cell text color if it is located on an even-numbered line. Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color text odd

Allows setting of cell text color if it is located on an odd-numbered line. Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color zero even

Allows setting of cell text color if it is located on an even-numbered line and its value is 0 (zero). Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color zero odd

Allows setting of cell text color if it is located on an odd-numbered line and its value is 0 (zero). Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color minus odd

Allows setting of cell text color if it is located on an even-numbered line and its value is negative. Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color minus odd

Allows setting of cell text color if it is located on an odd-numbered line and its value is negative. Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style text font

Allows setting of cell font. Associated values: font numbers (see the PV Add font and PV GET FONT LIST commands).

pv style text size

Allows setting of cell font size. Associated values: size in pixels.

pv style text face

Allows setting of cell style sheet. Associated values: style sheet numbers or constants of the PV Style special values theme.

pv style text bold

Allows setting of Bold for the cell text. Associated values: constants of the PV Style values theme.
- pv value on: Bold applied in cell.
- pv value off: Bold not applied in cell.

pv style text italic

Allows setting of Italic for the cell text. Associated values: constants of the PV Style values theme.
- pv value on: Italic applied in cell.
- pv value off: Italic not applied in cell.

pv style text underline

Allows setting of Underline for the cell text. Associated values: constants of the PV Style values theme.
- pv value on: Underline applied in cell.
- pv value off: Underline not applied in cell.

pv style text outline

Allows setting of Outline for the cell text. Associated values: constants of the PV Style values theme.
- pv value on: Outline applied in cell.
- pv value off: Outline applied in cell.

pv style text shadow

Allows setting of Shadow for the cell text. Associated values: constants of the PV Style values theme.
- pv value on: Shadow applied in cell.
- pv value off: Shadow not applied in cell.

pv style text condensed

Allows setting of Condensed for the cell text. Associated values: constants of the PV Style values theme.
- pv value on: Condensed applied in cell.
- pv value off: Condensed not applied in cell.

pv style text extended

Allows setting of Extended for the cell text. Associated values: constants of the PV Style values theme.
• pv value on: Extended applied in cell.
• pv value off: Extended not applied in cell.

pv style hor alignment

Allows setting of horizontal alignment of cell content. Associated values: constants of the PV Style values theme.
• pv value hor alignment default: applies horizontal alignment by default to the cell.
• pv value hor alignment left: applies left horizontal alignment to the cell.
• pv value hor alignment center: applies center horizontal alignment to the cell.
• pv value hor alignment right: applies right horizontal alignment to the cell.

pv style vert alignment

Allows setting of vertical alignment of cell content. Associated values: constants of the PV Style values theme.
• pv value vert alignment top: applies top vertical alignment to the cell.
• pv value vert alignment center: applies center vertical alignment to the cell.
• pv value vert alignment bottom: applies bottom vertical alignment to the cell.

pv style rotation

Allows setting of cell content rotation. Associated values: constants of the PV Style values theme.
• pv value rotation 0: no rotation applied to the cell.
• pv value rotation 90: applies rotation of 90° to the left.
• pv value rotation 180: applies rotation of 180°.
• pv value rotation 270: applies rotation of 270° to the left.

pv style format forced text

Allows "forcing" the cell display in raw text, i.e. without the automatic display format applied by 4D View based on the cell contents (number, date, text, etc.). Associated values: constants of the PV Style values theme.
• pv value on: cell contents are displayed without automatic format.
• pv value off (default): cell contents are displayed with automatic format.

pv style automatic word wrap

Allows enabling the automatic word wrap function when the contents of a cell exceed its width. Associated values: constants of the PV Style values theme.
- pv value on: cell contents automatically move to the next line if necessary.
- pv value off: cell contents run over into the adjacent cells if necessary.

Note: To define, in one selection, the property of a range of cells, you can use the PV SET RANGE PROPERTY command.

Example

Find all cells containing a formula which refers to cell D20, in order to switch between locking and unlocking them.

```
C_LONGINT($ProtectedCell)  `To lock or unlock cells
C_LONGINT($EndColumn;$EndRow)  `To save lower/right limits
C_LONGINT($StartColumn;$StartRow)  `To save upper/left limits
C_LONGINT($Column;$Row)  `To get coordinates in loop

ARRAY LONGINT($LeftTab;0)
ARRAY LONGINT($UpperTab;0)
ARRAY LONGINT($RightTab;0)
ARRAY LONGINT($LowerTab;0)

PV FIND ALL (Area;"$D$20";0;0)  `Cells containing "$D$20"
   `Selected cell coordinates
PV GET CURRENT CELL (Area;$LeftTab;$UpperTab;$RightTab;$LowerTab)

If (Size of array($LeftTab)#0)  `Are there formulas corresponding to search criteria?
   SORT ARRAY($LeftTab;$UpperTab;$RightTab;$LowerTab;>)
   $StartColumn:=$LeftTab{1}  `Get left-most cell

   SORT ARRAY($UpperTab;$LeftTab;$RightTab;$LowerTab;>)
   $StartRow:=$UpperTab{1}  `Get upper-most cell

   SORT ARRAY($RightTab;$UpperTab;$LeftTab;$LowerTab;>)
   $EndColumn:=$RightTab{Size of array($RightTab)}  `Get right-most cell

   SORT ARRAY($LowerTab;$RightTab;$UpperTab;$LeftTab;>)
   $EndRow:=$LowerTab{Size of array($LowerTab)}    `Get lowest cell
```

```
            `Review the selection
         For ($Column;$StartCol;$EndCol)
            For ($Row;$StartRow;$EndRow)
               If (Position("$D$20";PV Get cell formula (Area;$Column;$Row))>0)
                     `Lock?
                  $ProtectedCell:=PV Get cell property (Area;$Column;$Row;pv style locked )
                  `Switch locked/unlocked
⇒                    PV SET CELL PROPERTY (Area;$Column;$Row;pv style locked ;

Num($ProtectedCell=0))  `0 ↔ 1
               End if
            End for
         End for
      End if  `Range(s) selected?
```

See Also

PV Get cell property, PV Get range property, PV SET RANGE PROPERTY.

Constants

PV Style properties, PV Cell properties, PV Style values, PV Style special values, PV Style format date time and PV Picture mapping mode themes.

PV SET RANGE PROPERTY

PV Cell property

version 2004 (Modified)

PV SET RANGE PROPERTY (area; left; top; right; bottom; property; value)

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint	→	Left cell column number
top	Longint	→	Top cell row number
right	Longint	→	Right cell column number
bottom	Longint	→	Bottom cell row number
property	Longint	→	Property number
value	Longint	→	Property value

Description

The PV SET RANGE PROPERTY command sets the value of the property for the selected cell range defined using the left, top, right and bottom parameters. For more information on cell ranges, see the PV Selection, Introduction section.

To define property, you can use:
• the constants of the PV Cell properties theme. In this case, pass the height or width of the cell range in pixels in the value parameter.
• the constants of the PV Style properties theme. In this case, to define the value parameter, use the constants of the PV Style values, PV Style special values, PV Style format date time or PV Picture mapping mode theme.

The following list describes the different constants used in the property parameter and the associated values:

PV Cell properties theme

pv cell width

Allows setting of each cell width (and thus each column) contained in the defined range. Associated values: width expressed in pixels.

pv cell height

Allows setting of each cell height (and thus each row) contained in the defined range. Associated values: height expressed in pixels.

PV Style properties theme

pv style locked

Allows setting of locking in each cell of the range. Locked cell contents can no longer be modified, selected, etc. Associated values: constants of the PV Style values theme.
• pv value on: cells locked.
• pv value off: cells not locked.

pv style hidden

Allows setting of locking and hiding in each cell of the range. Locked and hidden cell contents are not displayed and can no longer be modified, selected, etc. Associated values: constants of the PV Style values theme.
• pv value on: cells locked and hidden.
• pv value off: cells not locked or hidden.

pv style spellcheck

Allows application of spellcheck for the cell range. Associated values: constants of the PV Style values theme.
• pv value on: a spellcheck is applied to the cell range.
• pv value off: no spellcheck is applied to the cell range.

pv style use picture height

Allows adapting of size of each cell in the range regarding the picture height associated with it. Associated values: constants of the PV Style values theme.
• pv value on: the size of each cell in the range is adapted to the height of the picture it contains. If there is no picture associated with it, the cell is not resized.
• pv value off: the size of the cells does not vary regarding the picture height associated with it.

pv style based on

Each cell in the range uses, as a model, the style sheet whose number is passed in the value parameter. Associated values: style sheet numbers or constants of the PV Style special values theme.

pv style format alpha

Each cell in the range uses the text display format whose number is passed in the value parameter. Associated values: display format numbers.

pv style format num

Each cell in the range uses the number display format whose number is passed in the value parameter. Associated values: display format numbers.

Note: Default display format numbers correspond to their position in the menu used for selecting formats in the cell Format dialog box.

pv style format bool

Each cell in the range uses the Boolean display format whose number is passed in the value parameter. Associated values: display format numbers.

pv style format date time

Each cell in the range uses the date and time display format whose number is passed in the value parameter. Associated values: constants of the PV Style format date time theme.
- pv Short: 02/21/02
- pv Abbreviated: thu 21 feb 2002
- pv Long: thursday 21 february 2002
- pv Short2: 02/21/2002
- pv Month Day Year: 21 february, 2002
- pv Abbr Month Day Year: 21 feb, 2002
- pv Day Name: thursday
- pv Day Number: 21
- pv Month Name: february
- pv Month Number: 2
- pv Year Number: 2002
- pv Long H MM AM PM: thursday 21 february 2002 at 12:30 PM
- pv Abbreviated H MM AM PM: thu 21 feb 2002 at 12:30 PM
- pv Short HH MM SS: 02/21/02 at 12:30:00
- pv Month Day Year H MM AM PM: 21 february, 2002 at 12:30 PM
- pv Short2 Hour Min Sec: 21/02/2002 and 12 hours 30 minutes 0 second
- pv HH MM SS: 12:30:00
- pv HH MM: 12:30
- pv Hour Min Sec: 12 hours 30 minutes 0 second
- pv Hour Min: 12 hours 30 minutes
- pv HH MM AM PM: 12:30 PM

Note: Depending on your current System settings, the resulting display can be different.

pv style format picture

Allows definition of picture display format associated with each cell in the range. Associated values: constants of the PV Picture mapping mode theme.
- pv mapping trunc non-centered
- pv mapping truncated centered
- pv mapping replicated
- pv mapping scaled to fit prop
- pv mapping scaled to fit
- pv mapping scaled centered prop

pv style color back even

Allows setting of background color in each cell of the range if it is located on an even-numbered line. Associated values: color numbers (see the PV RGB to color and PV Index to color commands) or pv value none (PV Style Values theme) to set no color.

pv style color back odd

Allows setting of background color in each cell of the range if it is located on an odd-numbered line. Associated values: color numbers (see the PV RGB to color and PV Index to color commands) or pv value none (PV Style Values theme) to set no color.

pv style color text even

Allows setting of text color in each cell of the range if it is located on an even-numbered line. Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color text odd

Allows setting of text color in each cell of the range if it is located on an odd-numbered line. Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color zero even

Allows setting of text color in each cell of the range if it is located on an even-numbered line and its value is 0 (zero). Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color zero odd

Allows setting of text color in each cell of the range if it is located on an odd-numbered line and its value is 0 (zero). Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color minus odd

Allows setting of text color in each cell of the range if it is located on an even-numbered line and its value is negative. Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style color minus odd

Allows setting of text color in each cell of the range if it is located on an odd-numbered line and its value is negative. Associated values: color numbers (see the PV RGB to color and PV Index to color commands).

pv style text font

Allows setting of cell range font. Associated values: font numbers (see the PV Add font and PV GET FONT LIST commands).

pv style text size

Allows setting of cell range font size. Associated values: size in pixels.

pv style text face

Allows setting of cell range style sheet. Associated values: style sheet numbers or constants of the PV Style special values theme.

pv style text bold

Allows setting of Bold for the cell range text. Associated values: constants of the PV Style values theme.
- pv value on: Bold applied in cells.
- pv value off: Bold not applied in cells.

pv style text italic

Allows setting of Italic for the cell range text. Associated values: constants of the PV Style values theme.
- pv value on: Italic applied in cells.
- pv value off: Italic not applied in cells.

pv style text underline

Allows setting of Underline for the cell range text. Associated values: constants of the PV Style values theme.
- pv value on: Underline applied in cells.
- pv value off: Underline not applied in cells.

pv style text outline

Allows setting of Outline for the cell range text. Associated values: constants of the PV Style values theme.
• pv value on: Outline applied in cells.
• pv value off: Outline applied in cells.

pv style text shadow

Allows setting of Shadow for the cell range text. Associated values: constants of the PV Style values theme.
• pv value on: Shadow applied in cells.
• pv value off: Shadow not applied in cells.

pv style text condensed

Allows setting of Condensed for the cell range text. Associated values: constants of the PV Style values theme.
• pv value on: Condensed applied in cells.
• pv value off: Condensed not applied in cells.

pv style text extended

Allows setting of Extended for the cell range text. Associated values: constants of the PV Style values theme.
• pv value on: Extended applied in cells.
• pv value off: Extended not applied in cells.

pv style hor alignment

Allows setting of horizontal alignment of cell range content. Associated values: constants of the PV Style values theme.
• pv value hor alignment default: applies horizontal alignment by default to the cell range.
• pv value hor alignment left: applies left horizontal alignment to the cell range.
• pv value hor alignment center: applies center horizontal alignment to the cell range.
• pv value hor alignment right: applies right horizontal alignment to the cell range.

pv style vert alignment

Allows setting of vertical alignment of cell range content. Associated values: constants of the PV Style values theme.
• pv value vert alignment top: applies top vertical alignment to the cell range.
• pv value vert alignment center: applies center vertical alignment to the cell range.
• pv value vert alignment bottom: applies bottom vertical alignment to the cell range.

pv style rotation

Allows setting of cell range content rotation. Associated values: constants of the PV Style values theme.
- pv value rotation 0: no rotation applied to the cell range.
- pv value rotation 90: applies 90° left rotation to the cell range.
- pv value rotation 180: applies 180° rotation to the cell range.
- pv value rotation 270: applies 270° left rotation to the cell range.

pv style format text forced

Allows "forcing" the cell range display in raw text, i.e. without the automatic display format applied by 4D View based on the cell contents (number, date, text, etc.). Associated values: constants of the PV Style values theme.
- pv value on: cell range contents are displayed without automatic format.
- pv value off (default): cell range contents are displayed with automatic format.

pv style automatic word wrap

Allows enabling the automatic word wrap function when the contents of a cell range exceed its width. Associated values: constants of the PV Style values theme.
- pv value on: cell range contents automatically move to the next line if necessary.
- pv value off: cell range contents run over into the adjacent cells if necessary.

Note: To define the property of a single cell, you can use the PV SET CELL PROPERTY command.

Example

Make all cells containing a formula referring to cell D20 appear in bold.

```
ARRAY LONGINT($LeftArray;0)
ARRAY LONGINT($TopArray;0)
ARRAY LONGINT($RightArray;0)
ARRAY LONGINT($BottomArray;0)
C_INTEGER($Index)

PV FIND ALL (Area;"$D$20";0;0)  `Formulas containing "$D$20"

   `Coordinates of selected cells
PV GET SELECTED RANGES LIST (Area;$LeftArray;$TopArray;$RightArray;$BottomArray)
```

```
   `Make bold
   For ($Index;1;Size of Array($LeftArray)) `Sweep ranges
⇒     PV SET RANGE PROPERTY (Area;$LeftArray{$Index};$TopArray{$Index};
                  $RightArray{$Index};$BottomArray{$Index};pv style text bold ;pv value on)
   End for
```

See Also

PV Get cell property, PV Get range property, PV SET CELL PROPERTY.

Constants

PV Style properties, PV Cell properties, PV Style values, PV Style special values, PV Style format date time and PV Picture mapping mode themes.

PV Get cell property

PV Cell property

version 6.8

PV Get cell property (area; column; row; property) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
property	Longint	→	Property number
Function result	Longint	←	Property value

Description

The PV Get cell property command returns the value of the cell property defined by the column and row parameters.

The PV Style properties and PV Cell properties theme constants are used to define the property parameter. For more information on these constants, see the description of the PV SET CELL PROPERTY command.

Example

See the example for the PV SET CELL PROPERTY command.

See Also

PV Get range property, PV SET CELL PROPERTY, PV SET RANGE PROPERTY.

Constants

PV Style properties and PV Cell properties themes.

PV Get range property

PV Cell property

version 6.8

PV Get range property (area; left; top; right; bottom; property) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint	→	Left cell column number
top	Longint	→	Top cell row number
right	Longint	→	Right cell column number
bottom	Longint	→	Bottom cell row number
property	Longint	→	Property number
Function result	Longint	←	Property value

Description

The PV Get range property command returns the value of the property for the selected cells defined using left, top, right and bottom parameters. For more information on cell ranges, refer to the PV Selection, Introduction section.

To define the property parameter, use the constants of the PV Style properties and PV Cell properties themes. For more information on these constants, see the description of the PV SET RANGE PROPERTY command.

Mixed values

For some properties, the PV Get range property may return the values 65535 or 255, which correspond to the "mixed" type constants of the PV Style values theme.
For instance, the statement :

$value:=***PV Get range property***(area; column; row; pv style color back even)

will return 65535 if the cells of the even-numbered rows in the range do not all have the same background color. This value corresponds to the pv value format mixed constant of the PV Style values theme. If the cells of the even-numbered rows in the range all have the same background color, the actual color number is returned.

This principle applies to the following properties:

Property	Value/Constant returned if mixed selection
pv style format alpha	65535 (pv value format mixed)
pv style format num	65535 (pv value format mixed)
pv style format bool	65535 (pv value format mixed)
pv style format date time	65535 (pv value format mixed)
pv style format picture	65535 (pv value format mixed)
pv style color back even	65535 (pv value format mixed)
pv style color back odd	65535 (pv value format mixed)
pv style color text even	65535 (pv value format mixed)
pv style color text odd	65535 (pv value format mixed)
pv style color zero even	65535 (pv value format mixed)
pv style color zero odd	65535 (pv value format mixed)
pv style hor alignment	255 (pv value hor alignment mixed)
pv style vert alignment	255 (pv value vert alignment mixed)
pv style rotation	255 (pv value rotation mixed)

Example

See the example for the PV Get cell property command.

See Also

PV Get cell property, PV SET CELL PROPERTY, PV SET RANGE PROPERTY.

Constants

PV Style properties and PV Cell properties themes.

PV SET CELL NAME

PV Cell property

version 2004.1 (Modified)

PV SET CELL NAME (area; column; row; name{; mode})

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
name	String	→	Cell name
mode	Longint	→	0 or omitted = Add the name, 1 = Replace the name

Description

The PV SET CELL NAME command sets the name of a cell defined using the column and row parameters.

You can access a cell either by its absolute reference — column and row numbers — or its name. The 4D View area formulas can also refer to this cell using its name.

Note: The first three characters of a cell name must not be numbers.

The optional mode parameter is used to set the way the new cell name must be set if the cell already has one or more name(s). You can use the constants of the PV Cell properties theme:
• If mode is omitted or if you pass the pv add name constant (value 0), the new name is added to any names already set for the cell.
• If you pass pv replace name (value 1) in mode, the new name replaces any names that have already been set for the cell.
To delete all the names associated with a cell, pass an empty string ("") in name and pv replace name in mode.

Example

This example allows changing the name of the current cell. If it has already a name, the user can replace it:

```
C_TEXT($CellName)  `Name to assign to cell
C_LONGINT($Column)  `Column number of current cell
C_LONGINT($Row)  `Row number of current cell

PV GET CURRENT CELL (Area;$Column;$Row)  `Get current cell coordinates
$CellName:=PV Get cell name (Area;$Column;$Row)  `Name possibly given already
```

```
If ($CellName="")  `The cell already has a name?
   $CellName:=Request("What name do you want to assign to this cell?";"New name")
   If ($CellName#"")  `A name was entered
⇒     PV SET CELL NAME (Area;$Column;$Row;$CellName)  `Assign entered name
   End if
Else  `Current cell already has a name
   CONFIRM("This cell is already named "+$CellName+". Do you want to rename
                                                                    it?";"Yes";"No")
   If (OK=1) `The user wants to rename the cell
⇒     PV SET CELL NAME (Area;$Column;$Row;$CellName;pv replace name)
   End if
End if
```

See Also

PV Get cell name, PV GET CELL NAME LIST.

PV Get cell name

PV Cell property

version 6.8

PV Get cell name (area; column; row) → String

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	String	←	Cell name

Description

The command PV Get cell name returns the cell name.

Example

Refer to the example in the PV SET CELL NAME command.

See Also

PV GET CELL NAME LIST, PV SET CELL NAME.

PV GET CELL NAME LIST

PV Cell property

version 6.8

PV GET CELL NAME LIST (area; columns; rows; names)

Parameter	Type		Description
area	Longint	→	4D View area
columns	Array	→	Cells column numbers array
rows	Array	→	Cells row numbers array
names	Array	←	Cells names

Description

The command PV GET CELL NAME LIST gets in the names, columns, and rows arrays the names, number of columns and number of rows of cells that have been assigned a name.

Example

The following method will certainly be found in a generic method managing cell names. There is no specific command that allows positioning on a cell using its name, but simply use the command PV GOTO CELL with, as a parameter, an element of each of the *$TabColumns* and *$TabRows* arrays corresponding to the position of the desired name in *$TabNames*:

```
C_TEXT($1)  `Name of cell name to go to
C_LONGINT($Position)  `Position of cell name in list of names
ARRAY LONGINT($TabColumns;0)  `Column array
ARRAY LONGINT($TabRows;0)  `Row array
ARRAY TEXT($TabNames;0)  `Cell name array

   `Get names and corresponding coordinates
⇒  PV GET CELL NAME LIST (Area;$TabColumns;$TabRows;$TabNames)

$Position:=Find in array($TabNames;$1)  `Look for our cell
If ($Position#-1)  `It exists
      `Make it current
   PV GOTO CELL (Area;$TabColumns{$Position};$TabRows{$Position})
Else
   `Manage possible error
End if
```

See Also

PV Get cell name, PV GOTO CELL, PV SET CELL NAME.

6

PV Cell value

PV Cell value, Introduction

The commands in this theme allows assigning values to cells or to recuperate the content.

The content of cells may be of several types, in relation to 4th Dimension (text, number, date, etc.), but can also be of different types, such as variables, fields, formulas, controls (for information, see the PV SET CELL CONTROL command) or quick reports.

Depending on commands, cell values can be fixed (copy of database field values during launch) or dynamic (link to the database in an interactive manner).

PV Get cell value type

PV Cell value

version 6.8

PV Get cell value type (area; column; row) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	Longint	←	Cell value type

Description

The command PV Get cell value type returns the value contained in the area cell assigned by column and row.

The type is returned as a long integer corresponding to a constant of the PV Cell value type theme.

Note: The type of value contained in a cell is automatically defined by 4D View depending on the contents of the cell.

Example

Refer to the example in the PV SET CELL FORMULA command.

Constants

PV Cell value type theme.

PV SET CELL STRING VALUE

PV Cell value

version 6.8

PV SET CELL STRING VALUE (area; column; row; value)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
value	String	→	Cell value

Description

The PV SET CELL STRING VALUE command writes the character string value in the cell assigned by column and row.

If value starts with a "=", it will be read as a formula.

Example

The following example reproduces the "Copy toward the bottom" spreadsheet only for alphanumeric type cells.

```
C_INTEGER($CopyNumber)
C_LONGINT($Column;$Row)  `Coordinates of cell to copy
C_INTEGER($Index)  `Loop index
C_STRING(80;$Value)  `Value to copy

$CopyNumber:=Num(Request("How many times should it copy towards the
                                                    bottom?";"5"))  `5 by default

If ($CopyNumber>0)
   PV GET CURRENT CELL (Area;$Column;$Row)  `Cell to copy
   $Value:=PV Get cell string value (Area;$Column;$Row)
   For ($Index;$Row+1;$Row+$CopyNumber)  `$CopyNumber loop(s)
⇒     PV SET CELL STRING VALUE (Area;$Column;$Index;$Value)
   End for
End if
```

Tip: This method can be used for any types, or better yet, to call a generic method testing the cell type with PV Get cell value type before calling the "PV Get cell xxx value" then the "PV SET CELL XXX VALUE" commands to copy the value regardless of its type, which can be a good exercise in generic programming.

See Also

PV Get cell string value, PV Get cell value type.

PV Get cell string value

PV Cell value

version 6.8

PV Get cell string value (area; column; row) → String

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	String	←	Cell value

Description

The command PV Get cell string value returns the string of characters contained in the cell set by column and row.

If the PV Get cell string value command is used with a non-alphanumeric cell, it returns an empty string.

Example

Refer to the example in the PV SET CELL STRING VALUE command.

See Also

PV Get cell value type, PV SET CELL STRING VALUE.

PV SET CELL TEXT VALUE

PV Cell value

version 6.8

PV SET CELL TEXT VALUE (area; column; line; value)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
line	Longint	→	Cell row number
value	Text	→	Cell value

Description

The command PV SET CELL TEXT VALUE writes the text value to the cell assigned by column and row.

Example

Refer to the example for the PV SET CELL STRING VALUE command.

See Also

PV Get cell text value, PV Get cell value type.

PV Get cell text value

PV Cell value

version 6.8

PV Get cell text value (area; column; row) → Text

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	Text	←	Cell value

Description

The command PV Get cell text value returns the text contained in the cell assigned by column and row.

If the PV Get cell text value command is used with a non-text type cell, it returns an empty string.

Examples

Refer to the example for the PV SET CELL STRING VALUE command.

See Also

PV Get cell value type, PV SET CELL TEXT VALUE.

PV SET CELL NUM VALUE

PV Cell value

version 6.8

PV SET CELL NUM VALUE (area; column; row; value)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
value	Number	→	Cell value

Description

The command PV SET CELL NUM VALUE assigns the number value to the cell assigned by column and row.

Example

Refer to the example for the PV SET CELL STRING VALUE command.

See Also

PV Get cell num value, PV Get cell value type.

PV Get cell num value

PV Cell value

version 6.8

PV Get cell num value (area; column; row) → Number

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	Number	←	Cell value

Description

The command PV Get cell num value returns the number contained in the cell assigned by column and row.

If the PV Get cell num value command is used with a non-numeric type cell, it returns 0.

Example

Refer to the example for the PV SET CELL STRING VALUE command.

See Also

PV Get cell value type, PV SET CELL NUM VALUE.

PV SET CELL DATE VALUE

PV Cell value

version 6.8

PV SET CELL DATE VALUE (area; column; row; value)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
value	Date	→	Cell value

Description

The command PV SET CELL DATE VALUE assigns the date value to the cell assigned by column and row.

Example

Refer to the example in the PV SET CELL STRING VALUE command.

See Also

PV Get cell date value, PV Get cell value type.

PV Get cell date value

PV Cell value

version 6.8

PV Get cell date value (area; column; row) → Date

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	Date	←	Cell value

Description

The command PV Get cell date value returns the date contained in the cell assigned by column and row.

If the PV Get cell date value command is used with a non-date type cell, it returns 00/00/00.

Example

Refer to the example in the PV SET CELL STRING VALUE command.

See Also

PV Get cell value type, PV SET CELL DATE VALUE.

PV SET CELL TIME VALUE

PV Cell value

version 6.8

PV SET CELL TIME VALUE (area; column; row; value)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
value	Time	→	Cell value

Description

The command PV SET CELL TIME VALUE assigns the time value to the cell assigned by column and row.

Example

Refer to the example for the PV SET CELL STRING VALUE command.

See Also

PV Get cell time value, PV Get cell value type.

PV Get cell time value

PV Cell value

version 6.8

PV Get cell time value (area; column; row) → Time

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	Time	←	Cell value

Description

The command PV Get cell time value returns the time contained in the cell assigned by column and row.

If the PV Get cell time value command is used with a non-time type cell, it returns 00:00:00.

Example

Refer to the example for the PV SET CELL STRING VALUE command.

See Also

PV Get cell value type, PV SET CELL TIME VALUE.

PV SET CELL DATE TIME VALUE

PV Cell value

version 6.8

PV SET CELL DATE TIME VALUE (area; column; row; date; time)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
date	Date	→	Date cell value
time	Time	→	Time cell value

Description

The command PV SET CELL DATE TIME VALUE assigns the values date and time as a single value to the cell assigned by column and row.

Example

This method requests a date and time for a meeting, with the latter being pushed ahead to the next day, a half-hour later. It then displays the new appointment in cell A1:

```
C_DATE($Date) `Meeting date
C_TIME($Time) `Meeting time

$Date:=Date(Request("Date of meeting";String(Current date)))
If ($Date#!00/00/00!) `Date valid
   $Time:=Time(Request("Time of meeting";Time string(Current time)))
   If ($Time#†00:00:00†) `Time valid
         `Reschedule the meeting a day later and 1/2 hour later then assign to cell A1
⇒        PV SET CELL DATE TIME VALUE (Area;1;1;$Date+1;$Time+†00:30:00†)
      PV GET CELL DATE TIME VALUE (Area;1;1;$Date;$Time) `Read info
      ALERT ("The meeting has been pushed ahead to  "+String($Date)+" at "+
                                                            Time string($Time))
   End if
End if
```

See Also

PV GET CELL DATE TIME VALUE, PV Get cell value type.

PV GET CELL DATE TIME VALUE

PV Cell value

version 6.8

PV GET CELL DATE TIME VALUE (area; column; row; dateValue; timeValue)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
dateValue	Date	←	Date cell value
timeValue	Time	←	Time cell value

Description

The command PV GET CELL DATE TIME VALUE returns the date and time values combined in the cell assigned by column and row.

If the PV GET CELL DATE TIME VALUE command is used by a non-date/time type cell, it returns 00/00/00 and 00:00:00.

Example

Refer to the example for the PV SET CELL DATE TIME VALUE command.

See Also

PV Get cell value type, PV SET CELL DATE TIME VALUE.

PV SET CELL BOOLEAN VALUE

PV Cell value

version 6.8

PV SET CELL BOOLEAN VALUE (area; column; row; value)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
value	Integer	→	Cell value

Description

The command PV SET CELL BOOLEAN VALUE assigns the integer value to the cell assigned by column and row. This integer allows expressing a Boolean value (0=False, 1=True): it is then necessary to translate 4D Booleans as a Num(theBoolean) function.

Example

We will modify the example for the PV SET CELL STRING VALUE command to a Boolean type, represented by an integer:

```
C_INTEGER($CopyNumber)
C_LONGINT($Column;$Row)  `Coordinates of the cell to copy
C_INTEGER($Index)  `Loop index
C_BOOLEAN($Value)  `Value to copy

$CopyNumber:=Num(Request("How many copies toward the bottom would you
                                                    like?";"5"))  `5 by default

If ($CopyNumber>0)
   PV GET CURRENT CELL (Area;$Column;$Row)  `Cell to copy
      `Converting integer to boolean
   $Value:=(PV Get cell boolean value(Area;$Column;$Row)=1)
   For ($Index;$Row+1;$Row+$CopyNumber)  `$CopyNumber loop(s)
⇒     PV SET CELL BOOLEAN VALUE (Area;$Column;$Index;Num($Value))  `Copy value
   End for
End if
```

See Also

PV Get cell boolean value, PV Get cell value type.

PV Get cell boolean value

PV Cell value

version 6.8

PV Get cell boolean value (area; column; row) → Integer

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	Integer	←	Cell value

Description

The command PV Get cell boolean value returns the cell value set by column and row as a Boolean. To translate it to a 4D Boolean, use the theBooleen:=(Result=1) instruction.

If the PV Get cell boolean value command is used with a non-Boolean type cell, it returns 0.

Example

Refer to the example for the PV SET CELL BOOLEAN VALUE command.

See Also

PV Get cell value type, PV SET CELL BOOLEAN VALUE.

PV SET CELL PICTURE VALUE

PV Cell value

version 6.8

PV SET CELL PICTURE VALUE (area; column; row; value)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
value	Picture	→	Cell value

Description

The command PV SET CELL PICTURE VALUE places the picture value in the cell set by column and row.

Example

Refer to the example for the PV SET CELL STRING VALUE command.

See Also

PV Get cell picture value, PV Get cell value type.

PV Get cell picture value

PV Cell value

version 6.8

PV Get cell picture value (area; column; row) → Picture

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	Picture	←	Cell value

Description

The command PV Get cell picture value returns the picture contained in the cell set by column and row.

If the PV Get cell picture value command is used with a non-picture type cell, it returns an empty picture.

Example

Refer to the example in the PV SET CELL STRING VALUE command.

See Also

PV Get cell value type, PV SET CELL PICTURE VALUE.

PV SET CELL VARIABLE

PV Cell value

version 6.8

PV SET CELL VARIABLE (area; column; row; variable)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
variable	String	→	Variable name

Description

The command PV SET CELL VARIABLE links the cell set by column and row to a variable. Any modifications to the cell content will affect the variable and vice-versa.

Example

The following form method displays the current time in cell C3 using the vTime variable. This variable is updated each second, such that the cell acts as a clock:

```
C_TIME(vTime) `Variable receiving displayed time

Case of
   : (Form event=On Load )
      If (PV Get cell variable (Area;3;3)="") `Still no variable associated with C3
⇒        PV SET CELL VARIABLE (Area;3;3;"vTime") `Associate the vTime variable
      End if
      SET TIMER(60) `Every second

   : (Form event=On Timer )
      vTime:=Current time
End case
```

See Also

PV ADD DYNAMIC ARRAYS, PV Get cell value type, PV Get cell variable, PV SET CELL FIELD.

PV Get cell variable

PV Cell value

version 6.8

PV Get cell variable (area; column; row) → String

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	String	←	Linked variable name

Description

The command PV Get cell variable returns the name of the variable linked to the cell set by column and row.

Example

Refer to the example for the PV SET CELL VARIABLE command.

See Also

PV Get cell value type, PV SET CELL VARIABLE.

PV SET CELL FIELD

PV Cell value

version 6.8

PV SET CELL FIELD (area; column; row; table; field)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
table	Integer	→	Table number
field	Integer	→	Field number

Description

The command PV SET CELL FIELD links a field to cell area whose coordinates correspond to where column and row intersect.

table is the number of the table in which you want to link the current record to the cell. The displayed value is that of the field for the current record.

The cell is linked to field in a dynamic manner: any modification of the value is automatically reflected in the current record field and vice-versa.

Example

It is possible to build an input form composed of 4D View cells: each of them allowing visualization and modification of associated fields using the PV SET CELL FIELD command. The record could be handled by the callback method or another form object, for a looped entry:

```
C_INTEGER($Table;$Field)  `Associated fields reference

If (Form event=On Load )
   PV GET CELL FIELD (Area;2;1;$Table;$Field)  `Is a field linked to B1?
   If ($Table=0) & ($Field=0)
⇒     PV SET CELL FIELD (Area;2;1;1;4)  `B1 : [Clients]LastName
   End if

   PV GET CELL FIELD (Area;2;2;$Table;$Field)  `Is a field linked to B2 ?
   If ($Table=0) & ($Field=0)
⇒     PV SET CELL FIELD (Area;2;2;1;3)  `B2 : [Clients]FirstName
   End if
```

```
      `Labels
   PV SET CELL STRING VALUE (Area;1;1;"Last Name :")
   PV SET CELL STRING VALUE (Area;1;2;"First Name :")

   CREATE RECORD([Clients]) `New client entered
End if
```

See Also

PV ADD DYNAMIC FIELDS, PV GET CELL FIELD, PV Get cell value type, PV SET CELL VARIABLE.

PV GET CELL FIELD

PV Cell value

version 6.8

PV GET CELL FIELD (area; column; row; table; field)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
table	Integer	←	Table number
field	Integer	←	Field number

Description

The PV GET CELL FIELD command returns, in the table and field parameters, the number for tables and fields linked to the cell set by column and row.

Example

(1) Refer to the example for the PV SET CELL FIELD command.

(2) The following example illustrates the use of the PV GET CELL FIELD command in a method enabling the sorting of dynamic columns when their header is clicked on. The area only contains dynamic columns. We begin by installing the *EventMethod* callback method that will be called in the event of a click in the area:

```
PV ON EVENT(area;pv on clicked;"EventMethod")
```

This statement catches any clicks in the area. The *EventMethod* method will enable us to detect clicks in the column headers and to sort the data as a consequence.

```
   `EventMethod Method
C_BOOLEAN($0)
C_LONGINT($1;$2;$3;$4;$5;$6)
C_INTEGER($tableNum;$fieldNum)

If($5=0)  `If the click takes place in a header
   $0:=True  `Cancels the event
⇒  PV GET CELL FIELD(area;$4;1;$tableNum;$fieldNum)  `Data to be sorted
   ORDER BY(Table($tableNum)->;Field($tableNum;$fieldNum)->;>) `Sorting 4D data
End if  `Linked values in the columns are automatically sorted
```

See Also

PV Get cell value type, PV SET CELL FIELD.

PV SET CELL FORMULA

version 6.8

PV SET CELL FORMULA (area; column; row; formula)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
formula	String	→	Formula

Description

The command PV SET CELL FORMULA sets formula in the cell set by column and row.

Example

The following example creates an incrementation to the bottom from a numeric type cell. If the value of the latter is later modified, the incrementation will automatically be updated by formulas that we place in the cells with PV SET CELL FORMULA.

```
C_INTEGER($CopyNumber) `Number of copies to execute
C_LONGINT($Column;$Row) `Coordinates of cell to copy
C_INTEGER($Index) `Loop index
C_TEXT($Name) `Start cell name

PV GET CURRENT CELL (Area;$Column;$Row)
   `Type verification
If (PV Get cell value type (Area;$Column;$Row)=pv number type value)
   $CopyNumber:=Num(Request("How many cells to the bottom do you want to
                                                   increment?";"5")) `5 by default
   If ($CopyNumber>0) `Validate
      $Name:=PV Get cell name (Area;$Column;$Row) `Get name
      If ($Name="") `No name?
         $Name:="COL"+String($Column)+"RW"+String($Row) `It currently has one
         PV SET CELL NAME(Area;$Column;$Row;$Name) `"COL2RW3" type name
      End if
      For ($Index;$Row+1;$Row+$CopyNumber) `$CopyNumber loop(s)
⇒        PV SET CELL FORMULA (Area;$Column;$Index;"="+$Name+"+"
                                                   +String($Index-$Row)) `Increase
      End for
   End if
Else `Incorrect type
   ALERT("The start cell must be a numeric type")
End if
```

See Also

PV Get cell formula, PV Get cell value type.

PV Get cell formula

PV Cell value

version 6.8

PV Get cell formula (area; column; row) → String

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	String	←	Formula

Description

The command PV Get cell formula returns the formula contained in the cell set by column and row.

Example

The method below recopies into a cell the formula of the cell found above it:

```
   C_LONGINT($Column;$Row) `Coordinates of cell to re-copy
   C_TEXT($Formula) `Formula to re-copy

   PV GET CURRENT CELL (Area;$Column;$Row)
⇒  $Formula:=PV Get cell formula  (Area;$Column;$Row-1) `Get the above formula
   PV SET CELL FORMULA (Area;$Column;$Row;$Formula) `Re-copy
```

See Also

PV Get cell value type, PV SET CELL FORMULA.

PV SET CELL CONTROL

PV Cell value

version 6.8

PV SET CELL CONTROL (area; column; row; type; nameArray; method; title)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
type	Integer	→	Control type
nameArray	String	→	Name of control management array
method	String	→	Callback method name
title	String	→	Control title

Description

The PV SET CELL CONTROL command places a "control" in the cell set by column and row. A control is a button, check box, radio button, drop-down list, or combo box type object contained within a cell.
If a control was already inserted in the cell, it is deleted and replaced by the new control, whatever its type.

type indicates the control type (among the five listed above) contained in the cell. To set this parameter, use the PV Control constants theme.

nameArray is the name of the array containing the values to display (for drop-down list and combo box control types).

method contains the name of the callback method linked to the control. For more information on callback methods, refer to the PV Area, Introduction section.

title contains the label of the button, check box, etc.

Examples

The following methods allow visualizing different types of controls:

• Standard button in C3:

```
     C_LONGINT(vStandardButton) `Standard button
⇒    PV SET CELL CONTROL (Area;3;3;pv control push button ;
                                  "vStandardButton";"CallbackButton";"Button")
```

```
   `CallbackButton method
C_LONGINT($1) `4D View area
C_LONGINT($2) `Column number
C_LONGINT($3) `Row number
C_POINTER($4) `Pointer to call object
ALERT("Control from method: "+Current method name)
```

• Radio buttons in E3, E4, E5:

```
C_LONGINT(vRadio1;vRadio2;vRadio3) `Radio buttons
vRadio1:=1
vRadio2:=0
vRadio3:=0
⇒ PV SET CELL CONTROL (Area;5;3;pv control radio button ;"vRadio1";"CallbackRadio";
                                                                    "Day")
⇒ PV SET CELL CONTROL (Area;5;4;pv control radio button ;"vRadio2";"CallbackRadio";
                                                                  "Month")
⇒ PV SET CELL CONTROL (Area;5;5;pv control radio button ;"vRadio3";"CallbackRadio";
                                                                   "Year")
```

```
   `CallbackRadio method
C_LONGINT($1) `4D View area
C_LONGINT($2) `Column number
C_LONGINT($3) `Row number
C_POINTER($4) `Pointer to call object
C_STRING(6;$Value)
Case of
   : ($4=(->vRadio1))
      vRadio2:=0
      vRadio3:=0
      $Value:="Day"
   : ($4=(->vRadio2))
      vRadio1:=0
      vRadio3:=0
      $Value:="Month"
   : ($4=(->vRadio3))
      vRadio1:=0
      vRadio2:=0
      $Value:="Year"
End case
PV SET CELL TEXT VALUE ($1;($2+1);3;$Value)
```

• Check boxes in E7, E8, E9:

```
C_LONGINT(vCheckBox1;vCheckBox2;vCheckBox3) `Boxes to check
vCheckBox1:=0
vCheckBox2:=0
vCheckBox3:=0
⇒ PV SET CELL CONTROL (Area;5;7;pv control check box ;"vCheckBox1";
                                                    "CallbackCheckBox";"Beginner")
⇒ PV SET CELL CONTROL (Area;5;8;pv control check box ;"vCheckBox2";
                                                "CallbackCheckBox";"Intermediate")
⇒ PV SET CELL CONTROL (Area;5;9;pv control check box ;"vCheckBox3";
                                                  "CallbackCheckBox";"Expert")

   `CallbackCheckBox method
C_LONGINT($1) `4D View area
C_LONGINT($2) `Column number
C_LONGINT($3) `Row number
C_POINTER($4) `Pointer to call object
C_TEXT($Value)
If (vCheckBox1=1)
   $Value:="Beginner"
End if
If (vCheckBox2=1)
   If ($Value#"")
      $Value:=$Value+" + "
   End if
   $Value:=$Value+"Intermediate"
End if
If (vCheckBox3=1)
   If ($Value#"")
      $Value:=$Value+" + "
   End if
   $Value:=$Value+"Expert"
End if
PV SET CELL TEXT VALUE ($1;($2+1);7;$Value)
```

• Drop down list in C5:

```
ARRAY TEXT(DropdownListArray;5) `For drop-down list
DropdownListArray{1}:="Monday"
DropdownListArray{2}:="Tuesday"
DropdownListArray{3}:="Wednesday"
DropdownListArray{4}:="Thursday"
DropdownListArray{5}:="Friday"
DropdownListArray:=3 `Default to Wednesday
⇒ PV SET CELL CONTROL (Area;3;5;pv control drop down ;"DropdownListArray";
                                                    "CallbackDropList";"")
```

```
   `CallbackDropList method
C_LONGINT($1) `4D View area
C_LONGINT($2) `Column number
C_LONGINT($3) `Row number
C_POINTER($4) `Pointer to call object
PV SET CELL TEXT VALUE ($1;3;6;DropdownListArray{DropdownListArray})
```

• Combo box in C7:

```
ARRAY TEXT(ComboArray;5) `For combo box list
ComboArray{1}:="Monday"
ComboArray{2}:="Tuesday"
ComboArray{3}:="Wednesday"
ComboArray{4}:="Thursday"
ComboArray{5}:="Friday"
ComboArray:=5 `Default to Friday
⇒ PV SET CELL CONTROL (Area;3;7;pv control combo box ;"ComboArray";
                                                    "CallbackCombo";"")

   `Method: CallbackCombo
C_LONGINT($1) `4D View area
C_LONGINT($2) `Column number
C_LONGINT($3) `Row number
C_POINTER($4) `Pointer to call object
PV SET CELL TEXT VALUE ($1;3;8;ComboArray{0})
```

See Also

PV GET CELL CONTROL, PV Get cell value type.

Constants

PV Control theme.

PV GET CELL CONTROL

PV Cell value

version 6.8

PV GET CELL CONTROL (area; column; row; type; name; method; title)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
type	Integer	←	Control type
name	String	←	Control name
method	String	←	Callback method name
title	String	←	Control title

Description

The command PV GET CELL CONTROL gets information about the "control" displayed in the cell set by column and row inside the 4D View area.

A control is a button, check box, radio button, pull-down list or combo box type object contained in a cell.

type indicates the control type (among the five listed above) contained in the cell. To set this parameter, use the PV Control constants theme.

name is the name of the array containing the values to display (for drop-down list and combo box control types).

method contains the name of the callback method linked to the control.

title contains the label of the button, check box, etc.

Example

The following method fills the cells that are below a control with the description of the latter:

```
C_LONGINT($Column;$Row)  `Coordinates of "controlled" cell
C_INTEGER($CtrlType)  `Control type
C_STRING(32;$CtrlName)  `Name (eventual) of control
C_STRING(32;$CallbackMethod)  `CallbackMethod name
C_STRING(32;$Title)  `Control title
C_STRING(32;$TypeName)  `Control type name

PV GET CURRENT CELL (Area;$Column;$Row)  `Controlled cell
⇒ PV GET CELL CONTROL (Area;$Column;$Row;$CtrlType;$CtrlName;$CallbackMethod;
                                                                $Title)
```

```
Case of
   : ($CtrlType=0)
      $TypeName:="No control"

   : ($CtrlType=pv control push button )
      $TypeName:="button"

   : ($CtrlType=pv control radio button )
      $TypeName:="radio button"

   : ($CtrlType=pv control check box )
      $TypeName:="check box"

   : ($CtrlType=pv control drop down )
      $TypeName:="drop-down list"

   : ($CtrlType=pv control combo box )
      $TypeName:="combo box"
End case

PV SET CELL TEXT VALUE (Area;$Column;$Row+1;"Type: "+$TypeName)
PV SET CELL TEXT VALUE (Area;$Column;$Row+2;"Name: "+$CtrlName)
PV SET CELL TEXT VALUE (Area;$Column;$Row+3;"Title: "+$Title)
PV SET CELL TEXT VALUE (Area;$Column;$Row+4;"Method: "+$CallbackMethod)
```

See Also

PV Get cell value type, PV SET CELL CONTROL.

Constants

PV Control theme.

PV ARRAY TO CELLS

PV Cell value

version 6.8

PV ARRAY TO CELLS (area; direction; column; row; conversion; array)

Parameter	Type		Description
area	Longint	→	4D View area
direction	Integer	→	0 = Row; 1 = Column
column	Longint	→	Start column number
row	Longint	→	Start row number
conversion	Integer	→	0 = Original type; 1 = Set to text
array	Array	→	Array name

Description

The command PV ARRAY TO CELLS inserts in area the content of arrays whose names are specified in the array array. The content is inserted from coordinates defined by column and row, in the direction defined by direction.

Note: Using the direction parameter is different from the direction parameter in the PV GOTO NEXT CELL and PV GET NEXT FREE CELL, where the direction can be in any direction. For PV ARRAY TO CELLS, the direction is either to the right (0 = row), or toward the bottom (1=column).

The fifth parameter, conversion, allows changing the data type of the cell contents that will end up as text. The type of source value must be compatible with this operation: if you request a data type change of a BLOB or a picture to text, conversion will be ignored.

Example

Re-copy, toward the bottom, three arrays of different types from the current cell. Depending on the response to the type change confirmation dialog box, the array content can be executed in 4D View cells in the converted (text) form or not.

```
C_INTEGER($Index) `Loop index
C_LONGINT($Column;$Row) `Start cell coordinates
C_INTEGER($Conversion) `Force conversion to text?

ARRAY STRING(20;$ArrayString;10) `Array of string values (start at current cell)
ARRAY DATE($ArrayDates;10) `Array of dates (next column)
ARRAY BOOLEAN($ArrayBooleans;10) `Array of booleans (third column)

   `Initialization
For ($Index;1;Size of array($ArrayString))
   $ArrayString{$Index}:=String($Index*10) `"10", "20", "30"...
   $ArrayDates{$Index}:=Current date(*)+$Index `25/06/2001, 26/06/2001...
   $ArrayBooleans{$Index}:=($Index%2=0) `True = even
End for
```

```
   PV GET CURRENT CELL (Area;$Column;$Row)

   CONFIRM("Would you like to convert the arrays content to text?")
   $Conversion:=OK

      `To obtain the columns "$ArrayString", "$ArrayDates" and "$ArrayBooleans" :
      `1 = toward the bottom
⇒  PV ARRAY TO CELLS (Area;1;$Column;$Row;$Conversion;$ArrayString)
⇒  PV ARRAY TO CELLS  (Area;1;$Column+1;$Row;$Conversion;$ArrayDates)
⇒  PV ARRAY TO CELLS  (Area;1;$Column+2;$Row;$Conversion;$ArrayBooleans)
```

See Also

PV CELLS TO ARRAY, PV FIELD TO CELLS.

PV CELLS TO ARRAY

PV Cell value

version 6.8

PV CELLS TO ARRAY (area; direction; axis; start; array; number)

Parameter	Type		Description
area	Longint	→	4D View area
direction	Integer	→	0 = Row; 1 = Column
axis	Longint	→	Row or column number
start	Longint	→	Start cell number
array	Array	→	Array name
number	Longint	→	Number of cells

Description

The command PV CELLS TO ARRAY fills the array with the cell content specified by axis, direction, start and number.

direction specifies if the PV CELLS TO ARRAY command must execute a copy of continuous cells in the horizontal (0) or vertical (1) direction. Depending on the value of direction, the axis parameter indicates or row or column number.

Note: Using the direction parameter is different from the direction parameter in the PV GOTO NEXT CELL and PV GET NEXT FREE CELL, where the direction can be in any direction. For PV CELLS TO ARRAY, the direction is either to the right (0 = row), or toward the bottom (1=column).

Example

Take, for example, a 4D View area included in the input screen of the client table: this included area, containing 10 rows maximum, will serve to enter or modify client contacts. The entry area is composed of 10 cells disposed in columns from the current cell:

```
ARRAY STRING(255;ContactsTab;0) `Contact name array
C_LONGINT($Column;$Row) `Coordinates of starting cell

PV GET CURRENT CELL (Area;$Column;$Row)

   `10 rows maximum from the current cell toward the bottom
⇒  PV CELLS TO ARRAY (Area;1;$Column;$Row;ContactsTab;10)

If (Size of array(ContactsTab)#0) `Was anything recuperated?
   RELATE MANY([Clients]Code) `Get linked records
   DELETE SELECTION([Contacts]) `Purge existing ones
      `Update contacts (new, modified or deleted)
   ARRAY TO SELECTION(ContactsTab;[Contacts]ContactName) `Create contacts
```

```
      `To keep the relation
   APPLY TO SELECTION([Contacts];[Contacts]CodeClient:=[Clients]Code)
   QUERY SELECTION([Contacts];[Contacts]ContactName="") `Purge empty contacts
   DELETE SELECTION([Contacts])
End if
```

See Also

PV ARRAY TO CELLS, PV FIELD TO CELLS.

PV FIELD TO CELLS

PV Cell value

version 6.8

PV FIELD TO CELLS (area; direction; column; row; conversion; master; table; field)

Parameter	Type		Description
area	Longint	→	4D View area
direction	Integer	→	0 = Row; 1 = Column
column	Longint	→	Start cell column number
row	Longint	→	Start cell row number
conversion	Integer	→	0 = Original type; 1 = Set to text
master	Integer	→	Master table number
table	Integer	→	Table number
field	Integer	→	Field number

Description

The command PV FIELD TO CELLS inserts in area the values of field corresponding to the current selection of the master table. Insertion starts from the cell defined by the column and row coordinates, in the direction defined by direction.

Note: Using the direction parameter is different from the direction parameter in the PV GOTO NEXT CELL and PV GET NEXT FREE CELL, where the direction can be in any direction. For PV FIELD TO CELLS, the direction is either to the right (0 = row), or toward the bottom (1=column).

The fifth parameter, conversion, allows retyping the cell content as text. The source value type must be compatible with this operation: if you ask to retype a BLOB or picture to text, conversion will be ignored.

The command can be applied to a table linked to a master table using a relation. The latter must be automatic (type) and go from the table defined by master to the table defined by table containing the field to display. In the traditional example of invoices and invoice rows, it allows recuperating the content of a field from a table of rows, but also from the invoice table relating to a selection of the invoice table rows (master table).

Unlike commands such as PV SET CELL FIELD, which maintain a dynamic relation with the database, modifications of values executed in the 4D View area after having been recuperated using the PV FIELD TO CELLS command are not executed in the records' content.

Example

In the PV CELLS TO ARRAY command example, we updated the contacts table once they were entered into a 4D View area included in a client input form. Here, we will update the included area during the On Load form event, in other words, during the load of the input form being modified.

An automatic relation of the master contact table to the professional title table (President, Secretary, Developer) allows recuperating, in the ad hoc field for the latter, the label of the professional title for each contact from its title code saved as an integer (starting field of the relation). We will display the contact name and its title in two columns.

```
   C_INTEGER($Master) `Master table number
   C_INTEGER($Table) `Table number
   C_INTEGER($Field) `Field number
   C_LONGINT($Column;$Row) `Coordinates of starting cell

   $Master:=Table(->[Contacts]) `Master table number: contacts (for the two columns)
   RELATE MANY([Clients]code)  `Get the corresponding contacts from the selection
   PV GET CURRENT CELL (Area;$Column;$Row)

      `Update the 4D View area for names
   $Table:=Table(->[Contacts]) `Number of the contacts table
      `Number of field whose content will be recuperated
   $Field:=Field(->[Contacts]NomDuContact)
      `Conversion not necessary, we will recuperate from the alphanumeric
⇒  PV FIELD TO CELLS  (Area;1;$Column;$Row;0;$Primary;$Table;$Field)

      `Update the 4D View area for titles
   $Table:=Table(->[Titres]) `Number of the title type (related) table
   $Field:=Field(->[Titres]Label) `Number of field whose content will be recuperated
⇒  PV FIELD TO CELLS  (Area;1;$Column+1;$Row;0;$Primary;$Table;$Field)
```

See Also

PV ARRAY TO CELLS, PV FIELDS LIST TO CELLS, PV SET CELL FIELD.

PV FIELDS LIST TO CELLS

PV Cell value

version 6.8

PV FIELDS LIST TO CELLS (area; direction; columns; rows; conversions; master; tables; fields)

Parameter	Type		Description
area	Longint	→	4D View area
direction	Integer	→	0 = Row; 1 = Column
columns	Array	→	Start cell column numbers array
rows	Array	→	Start cell row numbers array
conversions	Array	→	0 = Original type; 1 = Set to text
master	Integer	→	Master table number
tables	Array	→	Table numbers
fields	Array	→	Field numbers

Description

The PV FIELDS LIST TO CELLS command is the same as PV FIELD TO CELLS with multiple fields.

Note: Using the direction parameter is different from the direction parameter in the PV GOTO NEXT CELL and PV GET NEXT FREE CELL, where the direction can be in any direction. For PV FIELDS LIST TO CELLS, the direction is either to the right (0 = row), or toward the bottom (1=column).

The columns and rows parameters contain the numbers of columns and rows of the starting cells respectively.

The fifth parameter, conversion, allows retyping the cell content as text. The source value type must be compatible with this operation: if you ask to retype a BLOB or picture to text, conversion will be ignored.

The tables and fields arrays contain the numbers of tables and source fields.

The command can be applied to related tables or to the master table using relations. The latter must be automatic and go from the master table to the table of the field to display, defined using the tables and fields arrays.

Unlike commands such as PV ADD DYNAMIC FIELDS, which maintain a dynamic relation with the database, modifications of values executed in the 4D View area after having been recuperated using the PV FIELDS LIST TO CELLS command are not executed in the records' content.

Example

Again using the example for the PV FIELD TO CELLS command of an input form load for a record of the client table. This time, we will handle three fields simultaneously.

An automatic relation from the master contact table to the professional title table allows recuperating, in the ad hoc field of the latter, the title label of each contact from its title code saved as an integer (start field of the relation). We will display the third relevant column (column E since we are starting from Column C).

```
C_INTEGER($Master) `Master table number
C_INTEGER($Index) `Loop index

$Master:=Table(->[Contacts]) `Master table number:  contacts (for all columns)

ARRAY LONGINT($ArrayColumns;3) `Start cell column number
ARRAY LONGINT($ArrayRows;3) `Start cell row number
ARRAY INTEGER($ConversionArray;3) `0 for original type or 1 for set to text
ARRAY INTEGER($TablesArray;3) `Table numbers
ARRAY INTEGER($FieldsArray;3) `Field numbers

For ($Index;1;3)
   $ArrayColumns{$Index}:=$Index+2  `Columns C to E
   $ArrayRows{$Index}:=2  `Start at the 2nd line
   $ConversionArray{$Index}:=0  `Keep original fields types
End for

   `Tables and fields to get
$TablesArray{1}:=Table(->[Contacts])  `Number of the contacts table
$FieldsArray{1}:=Field(->[Contacts]ContactName)  `Number of Name field

$TablesArray{2}:=Table(->[Contacts])  `Number of the contacts table
$FieldsArray{2}:=Field(->[Contacts]ContactFirstName)  `Number of FirstName field

$TablesArray{3}:=Table(->[Titles])  `Number of title type table (related)
$FieldsArray{3}:=Field(->[Titles]Label)  `Number of Label field (President, Secretary,
                                                                    Developer)

   `Getting corresponding contacts selection
RELATE MANY([Clients]code)

   `Update the 4D View area with the Name, FirstName, and Title fields
⇒  PV FIELDS LIST TO
CELLS(Area;1;$ArrayColumns;$ArrayRows;$ConversionArray;$Master;
                                                $TablesArray;$FieldsArray)
```

See Also

PV ADD DYNAMIC FIELDS, PV ARRAY TO CELLS, PV FIELD TO CELLS.

PV REPORT MANY

PV Cell value

version 6.8

PV REPORT MANY (area; column; row; master; tableBreak; fieldBreak; operator; tables; fields; insert; detail; title)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
row	Longint	→	Row number
master	Integer	→	Primary table number
tableBreak	Integer	→	Table number where break occurs
fieldBreak	Array	→	Field number where break occurs
operator	Array integer	→	Operations to execute
tables	Array integer	→	Table number of fields to display
fields	Array integer	→	Number of fields to display
insert	Integer	→	0 = Replace; 1 = Insert rows
detail	Integer	→	Detail insertion options
title	String	→	Break title

Description

The command PV REPORT MANY creates a report in the 4D View area using the values from 4th Dimension fields specified in tables and fields starting from the current selection of the master table. An operation can be applied to each of these fields defined by operator: subtotal, number, maximum, etc. To define the operator parameter, use the constants in the PV Report functions theme.

The generated result is inserted in the area from the cell set by column and row.

tableBreak and fieldBreak assign the field where the break sequence will be executed. The breaks allow separating records in homogenous groups and executing intermediary calculations for each group.
A break is a value change in an order by table. It is necessary to associate this break level to an order by criteria. The order by for a selection of tableBreak and fieldBreak records is necessary before using the PV REPORT MANY command. It may have additional order by criteria that will not be considered in the break. For more information on building quick reports with breaks, refer to the 4th Dimension *User Reference* manual.

The insert parameter determines if the data placed in the 4D View area using this command must either replace cells that may be present or must be inserted into new rows. If you pass 0, the data is cleared and replaced. If you pass 1, additional rows are inserted.

The detail parameter allows you to define the way 4D View will insert the detail as well as the break rows in the report:
• If you pass 0 in detail, only break rows are inserted (the detail rows are not inserted).
• If you pass 1 in detail, the detail rows are inserted and the break value is repeated on each row.
• If you pass 2 in detail, the detail rows are inserted but the break value is only displayed once.

The title parameter allows you to set the title of the result row (i.e., "Total", "Average", etc.). As in the 4D Quick Report editor, you can use the # character as a placeholder for the current break value. For example, if the “Country” field is your break field, you can pass "Total for #:" in title. The report will display "Total for USA:" then "Total for Japan:", etc.
Pass an empty string if you do not want to insert a title.

Note: If detail is set to 0 and the title is an empty string, the first column is not inserted (it would then be empty).

Example

Display, in an included 4D View area in the client entry form, a report of contacts linked to this client, with a break indicating the number of contacts for each title: secretary, developer, documentation department, etc. An automatic relation exists between the contacts table and the titles table.

```
C_LONGINT($Column)  `Column number
C_LONGINT($Row)  `Row number
C_INTEGER($Master)  `Master table number
C_INTEGER($TableBreak)  `Table number where break occurs
C_INTEGER($FieldBreak)  `Field number wher break occurs
ARRAY INTEGER($Operator;3)  `Operations to execute
ARRAY INTEGER($Tables;3)  `Table number of fields to display
ARRAY INTEGER($Fields;3)  `Number of fields to display
C_INTEGER($Insert)  `0=Replace;1=Insert rows
C_INTEGER($Detail)  `Detail display options
C_STRING(30;$Title)  `Title of the result row

   `Initialize
$Column:=4  `Display starting at column D
$Row:=3  `Display starting in the 3rd row  (Title + empty row)
$Master:=Table(->[Contacts])  `This is a "report" of the contacts table
$TableBreak:=Table(->[Titles])
$FieldBreak:=Field(->[Titles]Label)  `Break will occur on contact title

$Operator{1}:=pv report function count  `Display in col 1 the number for each type
$Tables{1}:=Table(->[Titles])
$Fields{1}:=Field(->[Titles]Label)  `Label of column 1 title
```

```
$Operator{2}:=pv report function none  `No calculation in column 2
$Tables{2}:=Table(->[Contacts])
$Fields{2}:=Field(->[Contacts]ContactName) `Name of contact column 2

$Operator{3}:=pv report function none  `No calculation in column 3
$Tables{3}:=Table(->[Contacts])
$Fields{3}:=Field(->[Contacts]ContactFirstname) `First name of contact column 3

$Insert:=1  `Insert
$Detail:=2  `Detail rows are inserted, values are displayed once
$Title:="Number of contacts for #"  `The # will be replaced by the current break value

RELATE MANY([Clients]Code) `Get client contracts
   `Sort necessary at break + display in alphabetical order
ORDER BY([Contacts];[Titles]Label;[Contacts]ContactName;
                                                    [Contacts]ContactFirstname)

⇒  PV REPORT MANY (Area;$Column;$Row;$Master;$TableBreak;$FieldBreak;
                                        $Operator;$Tables;$Fields;$Insert;$Detail;$Title)
```

See Also

PV ARRAY TO CELLS, PV REPORT ONE.

Constants

PV Report functions theme.

Current Selections and Records

The selection will depend on links between tables at the database structure level, field numbers and arrays passed as a parameter to the command.

PV REPORT ONE

PV Cell value

version 6.8

PV REPORT ONE (area; column; row; master; tableBreak; fieldBreak; operator; tables; fields; insert; detail; title)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
row	Longint	→	Row number
master	Integer	→	Primary table number
tableBreak	Integer	→	Table number where break occurs
fieldBreak	Integer	→	Field number where break occurs
operator	Integer	→	Operations to execute
tables	Integer	→	Table number of field to display
fields	Integer	→	Number of field to display
insert	Integer	→	0 = Replace; 1 = Insert rows
detail	Longint	→	Detail insertion options
title	String	→	Break title

Description

The command PV REPORT ONE creates a report in the 4D View area using the values from 4th Dimension fields specified in tables and fields starting from the current selection of the master table. An operation can be applied to this field defined by operator: subtotal, number, maximum, etc. To define the operator parameter, use the constants in the PV Report functions theme.

The generated result is inserted in the area from the cell set by column and row.

tableBreak and fieldBreak assign the field where the break sequence will be executed. The breaks allow separating records in homogenous groups and executing intermediary calculations for each group.
A break is a value change in an order by table. It is necessary to associate this break level to an order by criteria. The order by for a selection of tableBreak and fieldBreak records is necessary before using the PV REPORT ONE command. It may have additional order by criteria that will not be considered in the break. For additional information on building quick reports with breaks, refer to the 4th Dimension *User manual*.

The insert parameter determines if the data placed in the 4D View area using this command must either replace cells that may be present or must be inserted into new rows. If you pass 0, the data is cleared and replaced. If you pass 1, additional rows are inserted.

The detail parameter allows you to define the way 4D View will insert the detail as well as the break rows in the report:
• If you pass 0 in detail, only break rows are inserted (the detail rows are not inserted).
• If you pass 1 in detail, the detail rows are inserted and the break value is repeated on each row.
• If you pass 2 in detail, the detail rows are inserted but the break value is only displayed once.

The title parameter allows you to set the title of the result row (i.e., "Total", "Average", etc.). As in the 4D Quick Report editor, you can use the # character as a placeholder for the current break value. For example, if the “Country” field is your break field, you can pass "Total for #:" and get "Total for USA:" then "Total for Japan:", etc. Pass an empty string if you do not want to insert a title.

Note: If detail is set to 0 and the title is an empty string, the first column is not inserted (it would then be empty).

Example

Display a client list in a 4D View area, seperating men and women and indicating the number of records for each group:

```
C_LONGINT($Column)  `Column number
C_LONGINT($Row)  `Row number
C_INTEGER($Master)  `Primary table number
C_INTEGER($TableBreak)  `Number of table where break occurs
C_INTEGER($FieldBreak)  `Number of field where break occurs
C_INTEGER($Operator)  `Operation to execute
C_INTEGER($Table)  `Table number of fields to display
C_INTEGER($Field)  `Number of fields to display
C_INTEGER($Insert)  `0=Replace;1=Insert rows
C_INTEGER($Detail)  `Detail display options
C_STRING(20;$Title)  `Title of the result row

   `Initialize
$Column:=4  `Display starting from column C
$Row:=3  `Display starting on the 3rd line (Title +  empty row)
$Master:=Table(->[Clients])  `Clients table is swept
$TableBreak:=Table(->[Clients])
$FieldBreak:=Field(->[Clients]Type)  `Break on the client type
$Operator:=pv report function count  `Calculate the number of men and women
$Table:=Table(->[Clients])  ` Clients table fields
$Field:=Field(->[Clients]Name)  `To print names
$Insert:=1  `Insert requested
$Detail:=2  `Detail rows are inserted, values are displayed once
$Title:="Total"
```

```
   ALL RECORDS([Clients])
      `Order by necessary at break + display alphabetically
   ORDER BY([Clients];[Clients]Type;[Clients]Name)

⇒  PV REPORT ONE (Area;$Column;$Row;$Master;$TableBreak;$FieldBreak;$Operator;
                                                $Table;$Field;$Insert;$Detail;$Title)
```

See Also

PV ARRAY TO CELLS, PV REPORT MANY.

Constants

PV Report functions theme.

PV ADD DYNAMIC ARRAYS

PV Cell value

version 6.8

PV ADD DYNAMIC ARRAYS (area; array)

Parameter	Type		Description
area	Longint	→	4D View area
array	String Array	→	Array containing names of array

Description

The command PV ADD DYNAMIC ARRAYS adds in area a block of rows corresponding to the values of arrays whose names are passed using the array parameter, starting from the cell A1.

The arrays must all contain the same number of elements and are always presented vertically (as columns). The first array is displayed in the column A, the others in columns located to its right. Dynamic rows are inserted above the row 1.

Note: If a dynamic field area was already inserted in the 4D View area using the PV ADD DYNAMIC FIELDS command, it is deleted and replaced by the dynamic arrays.

PV ADD DYNAMIC ARRAYS maintains a dynamic link with the arrays attached the dynamic portion of the area. As a result, modifications of values assigned in a 4D View area will be reflected within each array and vice versa. Deleting or adding elements in the 4D array will also be reflected within the area.

You cannot set several dynamic portions in the same 4D View area.

Notes:

• 4D array(s) and 4D View area must be defined in the same process.
• Dynamic data update is not available between the 4D User mode and 4D View external windows. To reflect in a 4D View window a modification assigned in the 4D User mode, you need to redraw the window using the PV REDRAW command (modifications executed through 4D commands are automatically reflected into 4D View areas).

Example

The following example get the names of contacts related to the current record of the clients table in an array, then displays the content in a 4D View area included in the input form of the client being modified.

Modifications executed by the user will be directly reflected in the 4D arrays, that we will have to next manage, for example, by updating the selection of recorded contacts.

```
ARRAY TEXT(NamesArray;0) `Contact names array
ARRAY TEXT(FirstnamesArray;0) `Contact first names array
ARRAY STRING(31;$ArrayArrays;2) `Arrays name array

$ArrayArrays{1}:="NamesArray" ` First dynamic column
$ArrayArrays{2}:="FirstnamesArray" ` Second dynamic column

RELATE MANY([Clients]Code) `Get linked contacts
SELECTION TO ARRAY([Contacts]ContactName;NamesArray;
                                    [Contacts]ContactFirstname;FirstnamesArray)
```

⇒ ***PV ADD DYNAMIC ARRAYS*** (Area;$ArrayArrays)

See Also

PV ADD DYNAMIC FIELDS, PV CLEAR DYNAMIC COLUMNS, PV SET CELL VARIABLE.

PV ADD DYNAMIC FIELDS

PV Cell value

version 6.8

PV ADD DYNAMIC FIELDS (area; master; tables; fields; methods)

Parameter	Type		Description
area	Longint	→	4D View area
master	Integer	→	Master table number
tables	Integer Array	→	Table numbers array
fields	Integer Array	→	Field numbers array
methods	String Array	→	Callback methods array

Description

The PV ADD DYNAMIC FIELDS command adds, in area, a block of rows corresponding to the values of fields defined by tables and fields for the current selection of the table defined by master, starting from the A1 cell. If dynamic columns have already been defined in area, the new block will be inserted starting from row 1 of the first available column. Values of fields can be modified directly from 4D View using the corresponding cells.

The result is always vertically present (as columns as well as tables,fields and methods array elements).

Note: If a dynamic arrays area was already inserted in the 4D View area using the PV ADD DYNAMIC ARRAYS command, it is deleted and replaced by the dynamic fields.

For any column, the operation can concern an array related to a master table by a relation. The latter must be an automatic type and go from the master array to the array of the field to display. In the traditional example of invoices and invoice rows, you can recuperate and modify the content of a field of the rows array, but also of the invoice table compared to a selection from the invoice rows array (master table).

Each callback method receives six parameters:

$1: Area
$2: Column number
$3: Array type
$4: Pointer to this array
$5: Number of the first row to (re)draw
$6: Number of rows to (re)draw in the area

Note: If you intend to compile your database, you must declare these parameters, even if you do not use them all.

$5 and $6: When the user scrolls the rows (records) in area, only new displayed rows are (re)drawn. $5 and $6 parameters allow you to know which rows are concerned.

The developer should fill in the callback methods array. 4D View will then use that array to fill in the calculated column. There is no returned value ($0).

PV ADD DYNAMIC FIELDS keeps a dynamic link with fields passed as parameters. As a result, modifications of values executed in the 4D View area are reflected in field(s) and vice-versa.

Notes:
• 4D methods and field values must be defined in the same process as the 4D View area.
• Dynamic data update is not available between the 4D User mode and 4D View external windows. To reflect in a 4D View window a modification assigned in the 4D User mode, you need to redraw the window using the PV REDRAW command (modifications executed through 4D commands are automatically reflected into 4D View areas).

Example

This example illustrates an enterable table included in an input form (with 4D View, this is rather easy). We will then modify fields in the contact table related to the current client, with their functions (linked table) and initials of each contact (calculated column).

```
ARRAY INTEGER($TablesArray;4) `Table numbers
ARRAY INTEGER($FieldsArray;4) `Field numbers
ARRAY STRING(30;$MethodsArray;4) `Callback method names

   `Column 1: contact name
$TablesArray{1}:=Table(->[Contacts])
$FieldsArray{1}:=Field(->[Contacts]ContactName)
$MethodsArray{1}:=""

   `Column 2: contact first name
$TablesArray{2}:=Table(->[Contacts])
$FieldsArray{2}:=Field(->[Contacts]ContactFirstname)
$MethodsArray{2}:=""

   `Column 3: contact title (linked table)
$TablesArray{3}:=Table(->[Titles])
$FieldsArray{3}:=Field(->[Titles]Label)
$MethodsArray{3}:=""

   `Column 4: order number/ total (calculated column)
$TablesArray{4}:=0
$FieldsArray{4}:=Is text   `Result
$MethodsArray{4}:="CallMethod"

RELATE MANY([Clients]Code) `Get contacts
⇒  PV ADD DYNAMIC FIELDS (Area;Table(->[Contacts]);$TablesArray;$FieldsArray;
                                                          $MethodsArray)
```

The code for the *CallMethod* project method is as follows:

```
C_LONGINT($1) `4D View area
C_LONGINT($2) `Column number
C_LONGINT($3) `Type of array
C_POINTER($4) `Pointer to this array
C_LONGINT($5) `First row of the dynamic area
C_LONGINT($6) `Number of lines that can be displayed in the area

GOTO SELECTED RECORD([Contacts];$5)
For($i;1;$6)
   $4->{$i}:=Substring([Contacts]ContactFirstname;1;1)+
                                                Substring([Contacts]ContactName;1;1)
   NEXT RECORD([Contacts])
End for
```

See Also

PV ADD DYNAMIC ARRAYS, PV CLEAR DYNAMIC COLUMNS, PV FIELD TO CELLS, PV SET CELL FIELD.

PV CLEAR DYNAMIC COLUMNS

PV Cell value

version 6.8

PV CLEAR DYNAMIC COLUMNS (area; start; number)

Parameter	Type		Description
area	Longint	→	4D View area
start	Longint	→	Start column number
number	Longint	→	Number of columns

Description

The command PV CLEAR DYNAMIC COLUMNS clears the contents of dynamic column number starting from the column numbered start.

Cleared dynamic columns can come from fields or arrays, created respectively by PV ADD DYNAMIC FIELDS and PV ADD DYNAMIC ARRAYS.

Remaining dynamic columns are rearranged so that the dynamic area always starts at column A and the dynamic area never contains “holes”.

The PV CLEAR DYNAMIC COLUMNS command is inoperative when used with one or more columns that do not exclusively use dynamic fields or arrays.

Example

In the example for PV ADD DYNAMIC FIELDS, we built a list entry from the contacts table linked to the current client, with their functions and order numbers. The below method deletes the third column while allowing first and last names to still be modifiable.

```
⇒    PV CLEAR DYNAMIC COLUMNS (Area;3;1)  `Delete column C
```

Once this line is executed, the fourth column (D) becomes the third column (C), so that the dynamic area does not contain “holes”.

See Also

PV ADD DYNAMIC ARRAYS, PV ADD DYNAMIC FIELDS.

PV UPDATE DYNAMIC AREA

PV Cell value

version 6.8.1

PV UPDATE DYNAMIC AREA (area)

Parameter	Type		Description
area	Longint	→	4D View area

Description

The PV UPDATE DYNAMIC AREA command causes the synchronization of the data present in the 4D View area and those of the 4th Dimension database.

This command is useful within the context of callback methods used in dynamic areas only. In fact, when a callback method causes the modification of the current selection of 4th Dimension, the 4D View area is only updated at the end of execution of the entire method. However, if in this case commands such as PV GOTO CELL are used in the callback method, the result obtained could be incorrect due to the temporary lag between 4th Dimension data and those of 4D View. To avoid this risk, it is necessary to call the PV UPDATE DYNAMIC AREA command during the callback method in order for the data of the 4D View area to immediately reflect any modifications carried out on those of 4th Dimension.

PV UPDATE DYNAMIC AREA causes the update of the 4D View area if the 4th Dimension selection has undergone at least one of the following modifications:
- Modification of the current selection within the context of linked fields,
- Modification of the size of linked arrays,
- Modification of the data of linked fields or arrays.

Example

This example continues that of the PV ADD DYNAMIC FIELDS command (enabling the linking of the 4D selection to the 4D View area). We install an on "right click" event method used to create a record in the 4D selection and to position itself on this record in the 4D View area.

```
PV ON EVENT (area;pv on right clicked;"CallbackMethod")
```

The code of the *CallbackMethod* project method is as follows:

```
C_BOOLEAN($0)
C_LONGINT($1;$2;$3;$4;$5;$6)

$0:=True  `Blocks event
CREATE RECORD([Contacts]) `New record
SAVE RECORD([Contacts]) `Saving of created record
ALL RECORDS([Contacts])
```

```
   `Updating of the 4D View selection in relation to that of 4th Dimension
⇒  PV UPDATE DYNAMIC AREA (area)

   `Selection of new record
   PV GOTO CELL (area;1;Records in selection([Contacts]))
```

See also

PV ADD DYNAMIC ARRAYS, PV ADD DYNAMIC FIELDS, PV CLEAR DYNAMIC COLUMNS.

7

PV Cell manipulation

PV Cell manipulation, Introduction

The commands in this theme allow executing queries, replacements and order by in a 4D View area.

This theme also contains a set of commands to quickly integrate Copy/Paste management into the code of an application and manage the "blobing" and "de-blobing" of a selection of cells.

PV FIND ONE (area; criteria; where; contains{; column; row })

Parameter	Type		Description
area	Longint	→	4D View area
criteria	String	→	String to query
where	Integer	→	0 = Formulas; 1 = Values
contains	Integer	→	0 = Contains; 1 = Equals
column	Longint	→	Starting cell column number
		←	Found cell column number
row	Longint	→	Starting cell row number
		←	Found cell row number

Description

The PV FIND ONE command searches for criteria among the cells of the area. The search will stop at the first cell, if any, that meets the search criteria.

criteria specifies the character string to query.

where indicates which part of the spreadsheet to query:
• 0: Queries formulas
• 1: Queries values

contains defines the type of comparison:
• 0: Partial (contains the queried value)
• 1: Total (equal to the queried value)

If the column and row optional parameters are omitted, the search starts at the top left corner of the area.
If column and row are passed, they indicate the cell of the area from which the search will begin.
The search is carried out from top to bottom and left to right, beginning with the indicated cell.

After executing the command, the first cell eventually found becomes the new current cell. If they were called, the column and row parameters then contain coordinates.

If no cell was found during the search, the current cell remains unchanged.

Example

Let's query the first cell containing the user response to an initial request. The query will start in the cell B3.

```
C_STRING(255;$Criteria)  `String to query
C_INTEGER($QueryWhere)  `0=Formulas / 1=Values
C_INTEGER($Contains)  `0=Equals / 1=Contains
C_LONGINT($Column)  `Column number of found cell
C_LONGINT($Row)  `Row number of found cell

$Criteria:=Request("What value should be queried?";"x")

If ($Criteria#"")  `Defined criteria
   CONFIRM("Query formulas or values?";"Values";"Formulas")
   $QueryWhere:=OK  `0=Formulas / 1=Values

   CONFIRM("What kind of comparison?";"Contains";"=")
   $Contains:=OK    `0=Contains / 1=Equals

   $Column:=2  `Search starting from cell B3
   $Row:=3

⇒      PV FIND ONE (Area;$Criteria;$QueryWhere;$Contains;$Column;$Row)  `Query
End if
```

See Also

PV FIND ALL, PV REPLACE ONE.

PV FIND ALL (area; criteria; where; contains)

Parameter	Type		Description
area	Longint	→	4D View area
criteria	String	→	String to look for
where	Integer	→	0 = Formulas; 1 = Values
contains	Integer	→	0 = Contains; 1 = Equals

Description

The command PV FIND ALL is similar to PV FIND ONE but selects all the cells in area that correspond to the query criteria.

After calling this command, the first cell eventually found becomes the new current cell and the other found cells are selected.
If no cell was found during the search, the current cell remains the same.

criteria specifies the character string to query.

where indicates which part of the spreadsheet to query:
• 0: Queries formulas
• 1: Queries values

contains defines the type of comparison:
• 0: Partial (contains the queried value)
• 1: Total (equal to the queried value)

Example

Refer to the example for the PV SET CELL PROPERTY command.

See Also

PV FIND ONE, PV REPLACE ALL.

PV REPLACE ONE

PV Cell manipulation

version 6.8

PV REPLACE ONE (area; string; replace; direction; where; contains{; column; row})

Parameter	Type		Description
area	Longint	→	4D View area
string	String	→	String to replace
replace	String	→	Replacement string
direction	Integer	→	0 = Column; 1 = Row
where	Integer	→	0 = Formulas; 1 = Values
contains	Integer	→	0 = Contains; 1 = Equals
column	Longint	→	Starting cell column number
		←	Found cell column number
row	Longint	→	Starting row column number
		←	Found cell row number

Description
The PV REPLACE ONE command replaces character string with replace in the first cell in area that corresponds to the query criteria defined using where or contains, starting from the cell set by column and row.

string specifies the character string to search and replace with replace.

where indicates which part of the spreadsheet to query:
• 0: Queries formulas
• 1: Queries values

contains defines the type of comparison:
• 0: Partial (contains the queried value)
• 1: Total (equal to the queried value)

If the column and row optional parameters are omitted, the search begins at the top left corner of the area. If column and row are passed, they indicate the cell of the area from which the search will begin.
La recherche s'effectue de haut en bas puis de gauche à droite à partir de la cellule de départ.

After execution of the command, the first cell found, if any, becomes the new current cell. If they were called, the column and row parameters will then contain the coordinates of this new cell.

If no cell was found during the search, the current cell remains unchanged.

Example

Replace the first occurrence of the current T.V.A. rate with a new reference (new rate).

```
C_INTEGER($Where)  `0=Formula / 1=Value
C_INTEGER($Contains)  `0=Contains / 1=Equals

$Where:=0  `Replacement formula
$Contains:=0  `Contains

   `Replace first instance
⇒  PV REPLACE ONE (Area;"$C$30";"$C$31";$Where;$Contains)
```

See Also

PV FIND ONE, PV REPLACE ALL.

PV REPLACE ALL

PV Cell manipulation

version 6.8

PV REPLACE ALL (area; string; replace; where; contains)

Parameter	Type		Description
area	Longint	→	4D View area
string	Longint	→	String to replace
replace	String	→	Replacement string
where	Integer	→	0 = Formulas; 1 = Values
contains	Integer	→	0 = Contains; 1 = Equals

Description

The command PV REPLACE ALL is similar to the PV REPLACE ONE command, except that it replaces the character string with the string replace in all area cells found corresponding to the query criteria defined with the where or contains parameters.

After calling this command, the first cell eventually found becomes the new current cell and the other cells found are selected.

If no replace has occurred, the active cell remains unchanged.

Example

Make all occurrences of the "Amount" string appear in capital letters:

⇒ ***PV REPLACE ALL*** (Area;"Amount";"AMOUNT";1;1)

See Also

PV FIND ALL, PV REPLACE ONE.

PV SORT ONE (area; left; top; right; bottom; direction; key; order)

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint	→	Left column number
top	Longint	→	Top row number
right	Longint	→	Right column number
bottom	Longint	→	Bottom row number
direction	Integer	→	0 = Row sort; 1 = Column sort
key	Longint	→	Column or row containing the values to sort
order	Integer	→	0 = Ascending; 1 = Descending

Description

The PV SORT ONE command sorts the contents of the selection delimited using left, top, right, and bottom in relation to values contained in the row or column key, in the order defined by order.

direction indicates if the sort should arrange rows or columns:
• If you pass 0, you arrange rows depending on the values of the row key.
• If you pass 1, you arrange columns depending on the values of the column key.

This command only operates with static data.
Dynamic areas (arrays and linked fields) must be sorted using 4D commands — the principle consists of sorting the source. An example of sorting dynamic columns linked to fields when the header is clicked on is supplied in the description of the PV GET CELL FIELD command. Note that sorting is not possible on picture type arrays and fields nor on calculated columns (that call a callback method and display its result).

Example

This example allows an ascending sort of static columns by clicking on the column header. The area only contains static columns.

• We begin by installing the *HeaderSortMethod* callback method, that will be called in the event of a click in the area:

```
PV ON EVENT (area;pv on clicked;"HeaderSortMethod")
```

• The *HeaderSortMethod* method catches any clicks on the column headers and sorts the corresponding data (from rows 1 to 25) in ascending order:

```
   `HeaderSortMethod method
C_BOOLEAN($0)
C_LONGINT($1;$2;$3;$4;$5;$6)

If ($5=0)  `If the click takes place on a header
   $0:=True   `Blocks the event
⇒     PV SORT ONE (area;$4;1;$4;25;1;$4;0)  `Ascending sort of the selected column
End if
```

See Also

PV SORT COLUMN, PV SORT MANY.

PV SORT MANY (area; left; top; right; bottom; direction; keys; order)

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint	→	Left column number
top	Longint	→	Top row number
right	Longint	→	Right column number
bottom	Longint	→	Bottom row number
direction	Integer	→	0 = Row; 1 = Column
keys	Array	→	Column(s) or row(s) containing the values to sort
order	Array	→	Sort directions: 0 = Ascending; 1 = Descending

Description

The command PV SORT MANY is similar to PV SORT ONE but with multi-sort. You must pass columns or rows serving as sort criteria in key and the order (ascending or descending) in which the sorts will be executed in order.

The sort is executed in the cell selection delimited by left, top, right, and bottom.

direction indicates if the sort should arrange rows or columns:
- If you pass 0, you arrange rows depending on the values of the row keys.
- If you pass 1, you arrange columns depending on the values of the column keys.

Example

Sort a cell selection (5 columns x 9 rows) in relation to the second column as the first ascending criteria and in the third column as the second descending criteria.

```
ARRAY LONGINT($Keys;2) `Column(s) or row(s) containing values to sort
ARRAY INTEGER($Orders;2) `0=Ascending / 1=Descending

   `Initialization
$Keys{1}:=3 `The 2nd column of the selection serves as 1st sort criteria
$Keys{2}:=4 `The 3rd column of the selection serves as the 2nd sort criteria
$Orders{1}:=0 `Ascending sort for the rows of the 2nd column of the selection
$Orders{2}:=1 `Descending sort for the rows of the 3rd column of the selection

⇒ PV SORT MANY (Area;2;2;6;10;1;$Keys;$Orders)
```

See Also

PV SORT COLUMN, PV SORT ONE.

PV SORT COLUMN

PV SORT COLUMN (area; column; order)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
order	Longint	→	Sort order

Description

The PV SORT COLUMN command is used to carry out a standard sort, in ascending or descending order, on a column set by the column parameter in the 4D View area.

Sorting a dynamic column produces a synchronized sort of the other columns so that the records always remain in their initial state.
A sort on a static column only sorts that column.

To set the order parameter, use one of the following constants, located in the "PV Header sort" theme:

Constant	Type	Value
pv ascending sort	Longint	2
pv descending sort	Longint	3

Note: This command can work only if the sort was previously allowed using the PV SET AREA PROPERTY command.

Example

With the following statement, the column will be sorted in ascending order:

⇒ ***PV SORT COLUMN***(area; 2; pv ascending sort)

See also

PV SET AREA PROPERTY, PV SORT ONE.

PV SPECIAL CLEAR (area; value; formula; format; borders)

Parameter	Type		Description
area	Longint	→	4D View area
value	Integer	→	0 = Do not clear; 1 = Clear
formula	Integer	→	0 = Do not clear; 1 = Clear
format	Integer	→	0 = Do not clear; 1 = Clear
borders	Integer	→	0 = Do not clear; 1 = Clear

Description

The command PV SPECIAL CLEAR clears the information defined in the value, formula,format and borders parameters from the selection of current cells in area.

Example

Erase the formulas, formats and borders of selected cells, while keeping possible values for cells containing values and not formulas:

```
⇒ PV SPECIAL CLEAR (Area;0;1;1;1) `Erase formulas, formats and borders
```

See Also

PV SPECIAL CUT, PV SPECIAL PASTE.

PV SPECIAL PASTE

PV SPECIAL PASTE (area; value; formula; format; borders)

Parameter	Type		Description
area	Longint	→	4D View area
value	Integer	→	0 = Do not paste; 1 = Paste
formula	Integer	→	0 = Do not paste; 1 = Paste
format	Integer	→	0 = Do not paste; 1 = Paste
borders	Integer	→	0 = Do not paste; 1 = Paste

Description

The command PV SPECIAL PASTE pastes, from cells contained on the clipboard, information defined in the value, formula, format and borders parameters in the current cell of area.

This command allows reusing data that was first "cut" by the PV SPECIAL CUT or copied using PV EXECUTE COMMAND (area; pv cmd edit copy).

Example

This example simulates a copy/paste of the value and format. It cuts the value and format of cell B2 and then pastes all of it in cell E2:

```
   PV GOTO CELL (Area;2;2)  `Starting cell: B2
   PV SPECIAL CUT (Area;1;0;1;0)  `Cut value and format
   PV GOTO CELL (Area;5;2)  `Destination cell: E2
⇒  PV SPECIAL PASTE (Area;1;0;1;0)  `Paste value and format
```

See Also

PV SPECIAL CLEAR, PV SPECIAL CUT.

PV SPECIAL CUT (area; value; formula; format; borders)

Parameter	Type		Description
area	Longint	→	4D View area
value	Integer	→	0 = Do not cut; 1 = Cut
formula	Integer	→	0 = Do not cut; 1 = Cut
format	Integer	→	0 = Do not cut; 1 = Cut
borders	Integer	→	0 = Do not cut; 1 = Cut

Description

The command PV SPECIAL CUT cuts from area the information defined using the value, formula, format and borders parameters for the selection of current cells.

Unlike the PV SPECIAL CLEAR, the PV SPECIAL CUT command saves cut information to the clipboard in order to use it at a later time with, for example, the PV SPECIAL PASTE command.

Example

Refer to the example in the PV SPECIAL PASTE command.

See Also

PV SPECIAL CLEAR, PV SPECIAL PASTE.

PV Copy to blob

PV Cell manipulation

version 6.8

PV Copy to blob (area) → Blob

Parameter	Type		Description
area	Longint	→	4D View area
Function result	Blob	←	Blob containing the selection

Description

The PV Copy to blob command returns the current cell selection of the area as a BLOB.

The selection does not necessarily have to be continuous (range).

Example

The method below exchanges the content of ranges A1, A2, B1, B2 and A3, A4, B3, B4.

```
   C_BLOB($Blob) `saving BLOB

   PV SELECT RANGE (Area;1;1;2;2;pv selection set) `Select range A1, A2, B1, B2
   PV SPECIAL CUT (Area;1;1;1) `Cut content and place it on the clipboard

   PV SELECT RANGE (Area;1;3;2;4;pv selection set) `Select range A3, A4, B3, B4
⇒  $Blob:=PV Copy to blob (Area) `Put selection in a BLOB
   PV SPECIAL PASTE (Area;1;1;1) `Paste content from clipboard

   PV SELECT RANGE (Area;1;1;2;2;pv selection set) `Select cell A1
   PV PASTE FROM BLOB (Area;$Blob;1;1;1;1) `Re-assign what was cleared
```

See Also

PV Create picture, PV PASTE FROM BLOB.

PV PASTE FROM BLOB

PV Cell manipulation

version 2003 (Modified)

PV PASTE FROM BLOB (area; blob; value; formula; format; borders)

Parameter	Type		Description
area	Longint	→	4D View area
blob	BLOB	→	BLOB containing the selection
value	Integer	→	0 = Do not paste ; 1 = Paste
formula	Integer	→	0 = Do not paste ; 1 = Paste
format	Integer	→	0 = Do not paste ; 1 = Paste
borders	Integer	→	0 = Do not paste ; 1 = Paste

Description

The PV PASTE FROM BLOB command pastes the information defined with the value, formula, format, and borders parameters from the current cell of area, from a selection contained in BLOB — created first using the PV Copy to blob command.

Example

Refer to the example for the PV Copy to blob command.

See Also

PV Copy to blob.

8

PV Columns & Rows

The commands in this theme allow managing columns and rows of a 4D View spreadsheet using programming:

- Inserting
- Deleting
- Reading and assigning sizes (height and width)
- Reading and assigning column and row headers (titles of rows and columns, as well as sort options for columns)

Names of rows and columns

You can associate a name with 4D View area rows and columns, which makes using them within a document easier. By default, each row and column has a name. Automatically naming rows and columns is done as follows:

• **Rows**: the name corresponds exactly to the real row number.
For commands referring to the row number, there is agreement with the name. The number of rows of an area can be set using the PV SET DOCUMENT PROPERTY command.

• **Columns**: Columns are named using letters. Depending on the area properties, the number of columns can exceed the 26 letters of the alphabet. Coding is done using several letters, starting again from the letter "A" (AA, AB, AC, etc., AZ, BA, BB, etc.).
For commands calling the column number, agreement between the column number/column name is done, by default, as follows:

Column name	Column number
A	1
B	2
C	3
[...]	
Y	25
Z	26
AA	27
AB	28
AC	29
etc.	

PV INSERT COLUMNS

version 6.8

PV INSERT COLUMNS (area; start; number)

Parameter	Type		Description
area	Longint	→	4D View area
start	Longint	→	Column before where new column(s) will be inserted
number	Longint	→	Number of columns

Description

The command PV INSERT COLUMNS inserts number column(s) in area starting at column number start. The column(s) will be inserted before the column defined by start.

Example

Insert a column before the first column (A) of the table, to shift the column area content to the right:

⇒ ***PV INSERT COLUMNS*** (Area;1;1)

See Also

PV DELETE COLUMNS, PV INSERT ROWS.

PV INSERT ROWS

version 6.8

PV INSERT ROWS (area; start; number)

Parameter	Type		Description
area	Longint	→	4D View area
start	Longint	→	Row before which new row(s) will be inserted
number	Longint	→	Number of rows

Description

The command PV INSERT ROWS inserts number row(s) in area starting at row number start. The inserted rows will be before the row defined by start.

Example

Insert a row before the first row (1) of the table, to shift the row area content toward the bottom:

⇒ ***PV INSERT ROWS*** (Area;1;1)

See Also

PV DELETE ROWS, PV INSERT COLUMNS.

PV INSERT CELLS (area; column; row; number; direction)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
row	Longint	→	Row number
number	Longint	→	Number of rows to insert
direction	Longint	→	Direction of the insertion

Description

The command PV INSERT CELLS inserts number cell(s) in area starting at cell defined by column and row.

The direction parameter allows you to define if the existing cells must be shifted toward the bottom or the right. Use the pv to the right or pv to the bottom constants in the PV Directions theme to set the value of this parameter.

Example

The following example inserts two cells starting at column 1 and row 1. Existing cells will be shifted toward the bottom:

```
⇒ PV INSERT CELLS(area;1;1;2; pv to the bottom)
```

See Also

PV DELETE CELLS.

Constants

PV Directions theme.

PV DELETE COLUMNS

version 6.8

PV DELETE COLUMNS (area; start; number)

Parameter	Type		Description
area	Longint	→	4D View area
start	Longint	→	Starting column number
number	Longint	→	Number of columns

Description

The command PV DELETE COLUMNS deletes number column(s) in area starting at column number start.

Example

Delete the first column (A) of the table, to shift the rest of the column area content to the left:

⇒ ***PV DELETE COLUMNS*** (Area;1;1)

See Also

PV DELETE ROWS, PV INSERT COLUMNS.

PV DELETE ROWS

PV DELETE ROWS (area; start; number)

Parameter	Type		Description
area	Longint	→	4D View area
start	Longint	→	Starting row number
number	Longint	→	Number of rows

Description

The command PV DELETE ROWS deletes number row(s) in area starting at row number start.

Example

Delete the first row (1) of the table, to shift the rest of the row area toward the top:

⇒ ***PV DELETE ROWS*** (Area;1;1)

See Also

PV DELETE COLUMNS, PV INSERT ROWS.

PV DELETE CELLS

version 6.8

PV DELETE CELLS (area; column; row; number; direction)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
row	Longint	→	Row number
number	Longint	→	Number of cells to delete
direction	Longint	→	Direction to shift the cells

Description

The command PV DELETE CELLS deletes number cell(s) in area starting at cell defined by column and row.

The direction parameter allows you to define if the existing cells must be shifted toward the top or the left. Use the pv to the left or pv to the top constants in the PV Directions theme to set the value of this parameter.

Example

The following example deletes one cell starting at column 2 and row 2. Other cells will be shifted toward the top:

⇒ ***PV DELETE CELLS***(area;2;2;1; pv to the top)

See Also

PV INSERT CELLS.

Constants

PV Directions theme.

PV SET COLUMNS WIDTH

version 6.8

PV SET COLUMNS WIDTH (area; first; last; width)

Parameter	Type		Description
area	Longint	→	4D View area
first	Longint	→	First column number
last	Longint	→	Last column number
width	Integer	→	Column width in pixels

Description

The PV SET COLUMNS WIDTH command allows modifying the width (in pixels) of area columns located between the first and last included columns.

Note : If you pass 0 (zero) in the first and last parameters, the defined width will be applied to all the columns of the area and will become the new default column width for the area. The default width is applied notably when the user double-clicks on the right-hand separator of a column.

Example

This example illustrates a resizing of rows and columns:

```
C_LONGINT($Column;$Row) `Principle loop index
C_LONGINT($Width;$Height) `Index of the column and row enlargement loop
C_LONGINT($StartWidth) `Original width of the Xth column
C_LONGINT($RequestWidth) `Requested width of the Xth column

   `Let's initialize
$StartWidth:=5 `Set the original width
$RequestWidth:=$StartWidth+5 `10 point width for the first column

For ($Column;1;5) `Taken care of for the first 5 columns
   $Row:=$Column `Only for the first five lines
   For ($Width;$StartWidth;$RequestWidth;2) `For the column "$Column"...
      $Height:=$Width-5 `Update height
      PV SET ROWS HEIGHT (area;$Row;$Row;PV Get row height (area;$Row)
                                                +$Height) `1 row
⇒     PV SET COLUMNS WIDTH (area;$Column;$Column;PV Get column width
                                          (area;$Row)+$Width) `1 column
      PV REDRAW (area) `Refresh
   End for
   $StartWidth:=$RequestWidth `To not start at the beginning
   $RequestWidth:=$RequestWidth+5 `Increase for the next column
End for
```

See Also

PV Get column width, PV SET ROWS HEIGHT.

PV SET ROWS HEIGHT

version 6.8

PV SET ROWS HEIGHT (area; first; last; height)

Parameter	Type		Description
area	Longint	→	4D View area
first	Longint	→	First row number
last	Longint	→	Last row number
height	Integer	→	Row height in pixels

Description

The PV SET ROWS HEIGHT command sets the height (in pixels) of the rows in area located between the first and last included rows.

Note : If you pass 0 (zero) in the first and last parameters, the defined height will be applied to all the rows of the area and will become the new default row height for the area. The default height is applied notably when the user double-clicks on the lower separator of a row.

Example

Refer to the example for the PV SET COLUMNS WIDTH command.

See Also

PV Get row height, PV SET COLUMNS WIDTH.

PV Get column width

version 6.8

PV Get column width (area; column) → Integer

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
Function result	Integer	←	Column width in pixels

Description

The PV Get column width command returns the width (in pixels) of the specified column.

Example

Refer to the examples for the PV SET COLUMNS WIDTH and PV ADD VERT SPLITTER commands.

See Also

PV Get row height, PV SET COLUMNS WIDTH.

PV Get row height

version 6.8

PV Get row height (area; row) → Integer

Parameter	Type		Description
area	Longint	→	4D View area
row	Longint	→	Row number
Function result	Integer	←	Row height in pixels

Description

The command PV Get row height returns the height (in pixels) of the specified row.

Example

Refer to the example for the PV SET COLUMNS WIDTH command.

See Also

PV Get column width, PV SET ROWS HEIGHT.

PV SET COLUMN HEADER

version 6.8

PV SET COLUMN HEADER (area; column; title)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
title	String	→	Column name

Description

The PV SET COLUMN HEADER command sets the title of the specified column.

For more information on the default names of rows and columns, refer to the PV Columns & rows, Introduction section.

Example

In this example, we will assign a new name to the first 10 columns and rows of the area.

```
   C_INTEGER($Index) `Loop index
   C_STRING(80;$Title) `Column/row name

   For ($Index;1;10)
      PV GET COLUMN HEADER (Area;$Index;$Title) `Get name of the $Index column
      $Title:="Column"+$Title" `Modify name
⇒     PV SET COLUMN HEADER (Area;$Index;"C"+$Title) `Assign new name

         `Read, modify and assign new name for the $Index row
      PV SET ROW HEADER (Area;$Index;"L"+PV Get row header (Area;$Index))
   End for
```

See Also

PV GET COLUMN HEADER, PV SET ROW HEADER.

PV GET COLUMN HEADER

version 6.8

PV GET COLUMN HEADER (area; column; title)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
title	String	←	Column name

Description

The PV GET COLUMN HEADER command gets the current title of the specified column.

For more information on the default name of rows and columns, refer to the PV Columns & rows, Introduction section.

Example

Refer to the example for the PV SET COLUMN HEADER command.

See Also

PV Get row header, PV SET COLUMN HEADER.

PV SET ROW HEADER

version 6.8

PV SET ROW HEADER (area; row; title)

Parameter	Type		Description
area	Longint	→	4D View area
row	Longint	→	Row number
title	String	→	Row name

Description

The command PV SET ROW HEADER sets the title to the specified row.

For more information on the default name of rows and columns, refer to the PV Columns & rows, Introduction section.

Example

Refer to the example for the PV SET COLUMN HEADER command.

See Also

PV Get row header, PV SET COLUMN HEADER.

PV Get row header

PV Get row header (area; row) → String

Parameter	Type		Description
area	Longint	→	4D View area
row	Longint	→	Row number
Function result	String	←	Row name

Description

The command PV Get row header returns the current name of the specified row.

For more information on the default name of rows and columns, refer to the PV Columns & rows, Introduction section.

Example

Refer to the example for the PV SET COLUMN HEADER command.

See Also

PV GET COLUMN HEADER, PV SET ROW HEADER.

9

PV Document

PV Document, Introduction

version 6.8

The commands in this theme allow manipulating documents readable with 4D View.

These commands allow saving or opening documents from disk, but also setting and getting related information using programming: subject, author, etc. as well as the number of default rows and columns.

PV OPEN DOCUMENT

PV OPEN DOCUMENT (area; document; template)

Parameter	Type		Description
area	Longint	→	4D View area
document	String	→	Document name
template	Integer	→	0 = Document; 1 = Template

Description

The command PV OPEN DOCUMENT opens in area the requested document.

Pass in document the full path name of the document to open. If you pass an empty string ("") in this parameter, a standard open file dialog box appears and the user can select the document. If the user clicks **Cancel** in this case, no document will be opened.

The template parameter allows you to set whether the document should be opened as a standard document (template=0) or as a template (template=1).
When a document is opened as a template, a new document "Untitled" is actually created, containing a copy of the requested document. The original document remains intact.
If the value of template is 1, the document is opened as if it were a template regardless of its actual status (document or template), set by PV SAVE DOCUMENT.

Note: The "document" template mechanism is managed by the OS. It is different from the one used with 4D View "templates", attached to included areas (accessible using the **Save as template** menu command). For more information on area templates, refer to the 4D View *User* manual.

Example

Open a standard open file dialog box, applied to 4D View:

```
⇒ PV OPEN DOCUMENT (Area;"";0) `Document choice
```

See Also

PV SAVE DOCUMENT.

System Variables and Sets

The *Document* variable system contains either the name or the access path and the name of the last disk file opened (see the 4th Dimension *Language Reference* manual, System Variables section).

The system variable *OK* uses 1 as its value if the document was correctly opened.

PV SAVE DOCUMENT

PV Document

version 6.8

PV SAVE DOCUMENT (area; document; template; replace; format)

Parameter	Type		Description
area	Longint	→	4D View area
document	String	→	Document name
template	Integer	→	0 = Document; 1 = Template
replace	Integer	→	0 = No replacement; 1 = Replacement
format	Longint	→	Document format

Description

The command PV SAVE DOCUMENT saves the 4D View area as a disk document.

Pass in document the name and the full access path of the document to save. If you pass an empty string in this parameter, a standard save file dialog box will appear and the user can select the name and the path of the document. If the user clicks the **Cancel** button, the document is not saved.

The template parameter allows you to set whether the document should be saved as a standard document (template=0) or as a template (template=1). For more information on templates, refer to the PV OPEN DOCUMENT command description.

If a document of the same name exists in the indicated area, PV SAVE DOCUMENT may overwrite the existing file depending on the value of the erase parameter. In this event, if erase is set to 0, error #26 is returned: "This document already exists." If the name was set by the user (empty string in document), the operating system will display the usual "This document already exists" confirmation regardless of the erase value.

If the target document is used by another 4D View area, PV SAVE DOCUMENT returns an error if it is a template or not.

Use the PV Document format constants theme to define the format parameter, which allows you to set the format in which to save the document.

Example

After opening an external document with the PV OPEN DOCUMENT command, we will first install a callback method detecting any change to the active cell.

```
C_BOOLEAN(FlagModifiedArea)
PV ON EVENT (Area;pv on active cell changed;"EventMethod")
```

The code for the *EventMethod* project method is as follows :

```
C_LONGINT($1) `4D View area reference
C_LONGINT($2) `Type of event
C_LONGINT($3) `Modification key code
C_LONGINT($4) `Column number
C_LONGINT($5) `Row number
C_LONGINT($6) `Ascii code of the key
C_BOOLEAN($0) `Value to return

$0:=False
FlagModifiedArea:=True `Modified area
```

If the document was modified, the user is then able to save the modified document and name it as desired:

```
If (FlagModifiedArea) `Document modified?
   CONFIRM("Do you want to save this document as a
template??";"Template";"Document")
      `This will be a template if the dialog box is confirmed (OK=1)
⇒     PV SAVE DOCUMENT (Area;"";OK;1;pv View )
End if
```

See Also

PV OPEN DOCUMENT.

System Variables and Sets

The system variable *OK* is set to 1 if the document has been saved correctly.

Constants

PV Document format theme.

PV EXPORT

PV Document

version 6.8.1

PV EXPORT (area; document; replace; format)

Parameter	Type		Description
area	Longint	→	4D View area
document	String	→	Document name or empty string
replace	Integer	→	0 = No replacement; 1 = Replacement
format	Longint	→	Document format

Description

The PV EXPORT command exports the 4D View area, or the export area, as a disk document.

In document, pass the name and complete access path of the document to be exported. If you pass an empty string in this parameter, an export file dialog box appears and the user can specify the name and location of the document. In this case, if the user clicks on the **Cancel** button, the document is not exported.

If a document with the same name exists in the indicated location, PV EXPORT will or will not overwrite the file according to the value of the replace parameter. In this case, when replace is 0, error no. 26 occurs: "Document already exists". If the name was defined by the user (empty string in document), it is the operating system that displays the traditional confirmation "This document already exists...", whatever the value of the replace parameter.

Use the PV Document format theme constants to define the format parameter, enabling you to specify the document recording format.

Note : The document format pv view constant cannot be applied to this command.

Unlike the PV SAVE DOCUMENT command (that saves the totality of an area), the PV EXPORT command allows the recording of just the export area of the document. The export area can be specified manually by the user (**File/Export Area>Set** command), or by programming using the statement PV EXECUTE COMMAND(area;pv cmd export area set). The export area consists of the cells selected at the moment of the definition of the area. By default, the export area consists of the entire document.

Example

The following example allows exporting, in HTML format, of all the selected cells in an area. If no cell is selected at the moment of export, an arbitrary range is set:

```
ARRAY LONGINT($ALleft;0)  `Left cell column numbers
ARRAY LONGINT($ALtop;0)  `Top cell row numbers
ARRAY LONGINT($ALright;0)  `Right cell column numbers
ARRAY LONGINT($ALbottom;0)  `Bottom cell row numbers

PV GET SELECTED RANGES LIST (area;$ALleft;$ALtop;$ALright;$ALbottom)

If (Size of array($ALleft)=0)  `No cell is selected
   PV SELECT RANGE(area;2;4;5;7;pv selection set)  `Arbitrary range
Else
   PV SELECT RANGES LIST(area;$ALleft;$ALtop;$ALright;$ALbottom;pv selection set)
End if

   `To reduce export area to the selected range
PV EXECUTE COMMAND(area;pv cmd export area set)
⇒  PV EXPORT(area;"";1;pv html)

   `To initialize export area for the whole document
PV EXECUTE COMMAND(area;pv cmd export area clear)
```

See also

PV SAVE DOCUMENT.

Constants

PV Document format theme.

PV SET DOCUMENT PROPERTY

PV Document

version 6.8

PV SET DOCUMENT PROPERTY (area; option; value)

Parameter	Type		Description
area	Longint	→	4D View area
option	Longint	→	Property number
value	Longint	→	Property value

Description

The PV SET DOCUMENT PROPERTY command sets the value of the property set by option for the 4D View document in area.

The PV Document properties constants are used to define the option parameter. These constants and their associated values are described below:

pv document modified

Allows setting or reading of the "modified" attribute of area. Associated values: pv value on or pv value off.
• when this constant is used in write mode (PV SET DOCUMENT PROPERTY command), passing pv value on in the value parameter will cause a warning dialog box to be displayed when the area is closed indicating that it has been modified. If the value parameter contains pv value off, and if the document is not modified subsequently by the user or by programming, this dialog box does not appear.
• when this constant is used in read mode, using the PV Get document property command, the value returned is 1 if the document has been modified, and 0 otherwise.

pv column count

Allows setting or reading of the number of columns displayed in the area.

pv picture count

This constant is read-only (PV Get document property command). It returns the number of pictures pasted into the area.

pv row count

Allows setting or reading of the number of rows displayed in the area.

pv no formula external call

Allows forbidding of calls to 4D variables, methods and commands in the formulas of the area. Associated values: pv value on or pv value off.
• pv value on: calls to 4D variables, methods and commands are forbidden in the formulas (in this case, it is possible to use "PV Allows Input" theme commands to define which 4D objects can be called).
• pv value off: calls to all 4D variables, methods and commands are allowed in the formulas (default value).

Examples

1) This generic method allows setting the number of columns and/or rows for a new 4D View area (during form load, for example).

```
⇒       PV SET DOCUMENT PROPERTY (Area;pv column count;10)  `10 columns
⇒       PV SET DOCUMENT PROPERTY (Area;pv row count;20)  `20 rows
```

(2) This method, associated for example with a 4D View document close button, allows never displaying the alert dialog box indicating that the area has been modified:

```
   If (PV Get document property (Area;pv document modified)#0)
⇒      PV SET DOCUMENT PROPERTY (Area;pv document modified;0)  `0 = unchanged,
                                                                  1 = changed
   End if
```

See Also

PV Get document property.

Constants

PV Document properties theme

PV Get document property

PV Document

version 6.8

PV Get document property (area; option) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
option	Longint	→	Property number
Function result	Longint	←	Property value

Description

The command PV Get document property returns the current value of the option parameter for the document in area.

The PV Document properties constants are used to define the options.

Example

Build a method that updates variables containing both the number of columns and the number of rows of the 4D View area passed in the first parameter.

```
C_LONGINT($ColNum) `Number of columns
C_LONGINT($RowNum) `Number of rows
C_LONGINT($PicNum) `Number of pictures

⇒ $ColNum:=PV Get document property (Area;pv column coun )
⇒ $RowNum:=PV Get document property (Area;pv row coun )
⇒ $PicNum:=PV Get document property (Area;pv picture count )

ALERT(" The 4D View area contains "+String($ColNum)+" column"+
                                    ("s"*Num($ColNum>1))+" and "+String($RowNum)+
                        " row"+("s"*Num($RowNum>1))+". It contains "+String($PicNum)+
                                                    " picture"+("s"*Num($PicNum>1))+".")
```

See Also

PV SET DOCUMENT PROPERTY.

Constants

PV Document properties theme.

PV SET DOCUMENT INFO

PV Document

version 6.8

PV SET DOCUMENT INFO (area; title; subject; author; company; comment)

Parameter	Type		Description
area	Longint	→	4D View area
title	String	→	Document title
subject	String	→	Document subject
author	String	→	Author of the document
company	String	→	Company name
comment	Text	→	Comment

Description

The command PV SET DOCUMENT INFO associates with the document in area information passed in the title, subject, author, company and comment parameters. This information corresponds to the info displayed in the "Information" dialog box for the document (**Tools/Document information...** menu command).

Example

In cases such as a 4D View area included in a form, information relative to this area is updated every time a user modifies or creates a record using this form.

```
C_STRING(255;$Title) `Title of document
C_STRING(255;$Subject) `Subject of document
C_STRING(255;$Author) `Author of document
C_STRING(255;$Company) `Company name
C_TEXT($Comment) `Comments
C_DATE($CreationDate) `Date of document creation
C_TIME($CreationTime) `Time of document creation
C_DATE($ModificationDate) `Date of last document modification
C_TIME($ModificationTime) `Time of last document modification

   `Get document related information
PV GET DOCUMENT INFO ($1;$Title;$Subject;$Author;$Company;$Comment;
                      $CreationDate;$CreationTime;$ModificationDate;$ModificationTime)
$Title:=Request("What is the document title?";$Title)
$Subject:=Request("What is the document subject?";$Subject)
$Author:=Request("What is your name?";$Author)
$Company:=Request("What is your company?";$Company)
$Comment:=Request("Comments?";$Comment)
   `Update info
⇒  PV SET DOCUMENT INFO(Area;$Title;$Subject;$Author;$Company;$Comment)
```

See Also

PV GET DOCUMENT INFO.

PV GET DOCUMENT INFO

PV Document

version 6.8

PV GET DOCUMENT INFO (area; title; subject; author; company; comment; creationDate; creationTime; modificationDate; modificationTime)

Parameter	Type		Description
area	Longint	→	4D View area
title	String	←	Title of the document
subject	String	←	Subject of the document
author	String	←	Author of the document
company	String	←	Company name
comment	Text	←	Comment
creationDate	Date	←	Creation date
creationTime	Time	←	Creation time
modificationDate	Date	←	Last modification date
modificationTime	Time	←	Last modification time

Description

The command PV GET DOCUMENT INFO gets in the title, subject, author, company and comment parameters, the document information displayed in the 4D View area. This information could have been entered in the User environment or by programming using the PV SET DOCUMENT INFO command.

The command also returns in creationDate, creationTime, modificationDate and modificationTime information concerning the date and time or creation/modification of the document, and is automatically updated by the operating system when the document is saved.

Example

Refer to the example in the PV SET DOCUMENT INFO command.

See Also

PV SET DOCUMENT INFO.

10

PV Panes

PV Panes, Introduction

version 6.8

To simultaneously view different parts of a 4D View area, you may want to scroll through a part of this area without affecting the display of the other section: these sections are called "panes".

A horizontal pane is the space between two visual boundaries, which can be: the upper portion of the spreadsheet, a separator in the vertical scroll bar, the lower portion of the spreadsheet.

A vertical pane is the space between two visual targets, which can be: the left side of the spreadsheet, a separator in the horizontal scroll bad, the right side of the spreadsheet.

As such, there is a default horizontal and vertical pane, which cover the entire area.

Several panes can exist at the same time in each of the two spreadsheet dimensions.

The commands of this theme allow manipulating the panes of a 4D View area: add or delete a pane (horizontal or vertical), get or assign pane properties.

PV ADD VERT SPLITTER

PV Panes

version 6.8

PV ADD VERT SPLITTER (area; splitter; position; locked)

Parameter	Type		Description
area	Longint	→	4D View area
splitter	Integer	→	Vertical separator number
position	Integer	→	Position of separator with respect to the last separator in pixels
locked	Integer	→	0 = Unlocked; 1 = Locked

Description

The PV ADD VERT SPLITTER command creates a new vertical splitter in area, whose number is passed in splitter. The splitter is created at position pixels from the left border of area.

If the locked parameter is equal to 1, the pane cannot be resized manually. If it is equal to 0, the pane can be resized freely by the user.

Notes:

• The position of the pane includes the width of the row headers, which it is possible to recover using the PV Get area property command, by passing the pv row headers width constant as the second parameter.
• The minimum width of a vertical pane is 8 pixels.
• You can see the number of vertical panes in an area using the PV Get area property command by passing the pv vert pane count constant as the second parameter. In this case, PV Get area property returns 1 when there is not a vertical splitter yet: the single pane is, in this case, the entire area.

Example

Take a spreadsheet containing twenty or so columns: the first contains a reference (for example, product code), which must absolutely remain visible, regardless of the cell being modified by the user. We will then create a vertical pane to display this column A.

```
      C_LONGINT($ColumnWidth) `Width of column A (in pixels)
      $ColumnWidth:=PV Get column width(Area; 1) `Column A
⇒     PV ADD VERT SPLITTER(Area;1;$ColumnWidth;0) `Resizable
```

See Also

PV ADD HOR SPLITTER, PV REMOVE VERT SPLITTER.

PV ADD HOR SPLITTER

version 6.8

PV ADD HOR SPLITTER (area; splitter; position; locked)

Parameter	Type		Description
area	Longint	→	4D View area
splitter	Integer	→	Horizontal separator number
position	Integer	→	Position of separator with respect to last separator in pixels
locked	Integer	→	0 = Unlocked; 1 = Locked

Description

The PV ADD HOR SPLITTER command creates a new horizontal splitter in area, whose number is passed in splitter. The splitter is created at position pixels from the last splitter of the area or, if the area does not contain a splitter, from the upper border of the area (outside of toolbars).

If the locked parameter is equal to 1, the pane cannot be resized manually. If it is equal to 0, the pane can be resized freely by the user.

Notes:

• The position of the pane includes the height of the column headers, which it is possible to recover using the PV Get area property command, by passing the pv column headers height constant as the second parameter.
• The minimum height of a horizontal pane is 8 pixels.
• You can see the number of horizontal panes in an area using the PV Get area property command by passing the pv hor pane count constant as the second parameter. In this case, PV Get area property returns 1 when there is not a horizontal splitter yet: the single pane is, in this case, the entire area.

Example

Add a horizontal pane, 30 pixels high, following panes that are already in the area.

```
C_LONGINT($HorPaneNum) `Number of existing horizontal panes
C_LONGINT($Position) `Position of pane

   `Number of horizontal panes
$HorPaneNum:=PV Get area property (Area;pv hor pane count )
$Position:=30 ` 30 pixels high
⇒ PV ADD HOR SPLITTER(Area;$HorPaneNum;$Position;0) `Re-sizeable
```

See Also

PV ADD VERT SPLITTER, PV REMOVE HOR SPLITTER.

PV REMOVE VERT SPLITTER

version 6.8

PV REMOVE VERT SPLITTER (area; splitter)

Parameter	Type		Description
area	Longint	→	4D View area
splitter	Integer	→	Vertical pane number

Description

The PV REMOVE VERT SPLITTER command removes, from area, a vertical splitter whose number is passed in splitter.

This command allows removing any type of vertical pane, created by the user or by using the PV ADD VERT SPLITTER command.

Example

Delete the last vertical pane:

```
   C_LONGINT($VertPaneNum)  `Number of vertical panes

      `Number of vertical panes
   $VertPaneNum:=PV Get area property(Area;pv vert pane count)
⇒  PV REMOVE VERT SPLITTER(Area;$VertPaneNum)
```

See Also

PV ADD VERT SPLITTER, PV REMOVE HOR SPLITTER.

PV REMOVE HOR SPLITTER

PV Panes

version 6.8

PV REMOVE HOR SPLITTER (area; splitter)

Parameter	Type		Description
area	Longint	→	4D View area
splitter	Integer	→	Horizontal pane number

Description

The PV REMOVE HOR SPLITTER command removes, from area, a horizontal splitter whose number is passed in splitter.

This command allows removing any type of horizontal pane, created by the user or by using the PV ADD VERT SPLITTER command.

Example

Delete the last horizontal pane:

```
   C_LONGINT($HorPaneNum)  `Number of horizontal panes

      `Number of horizontal panes
   $HorPaneNum:=PV Get area property (Area;pv hor pane count )
⇒  PV REMOVE HOR SPLITTER(Area;$HorPaneNum)
```

See Also

PV ADD HOR SPLITTER, PV REMOVE VERT SPLITTER.

PV SET VERT PANE PROPERTY

version 6.8

PV SET VERT PANE PROPERTY (area; pane; property; value)

Parameter	Type		Description
area	Longint	→	4D View area
pane	Integer	→	Vertical pane number
property	Longint	→	Property number
value	Longint	→	Property value

Description

The command PV SET VERT PANE PROPERTY sets the property value of the property of the vertical pane of area whose number is pane.

The PV Pane properties constants are used to define the properties.

The pv pane true scroll and pv pane relative scroll constants allow you to scroll horizontally the contents of the vertical pane whose number is pane:
• The pv pane true scroll allows scrolling the contents of the pane by value pixels starting from the origin of area (i.e. the first cell), regardless of the current position of the scrolling cursor.
• The pv pane relative scroll allows scrolling the contents of the pane by value pixels starting from the current position of the scrolling cursor.
Note that scrolling in pixels is adjusted so that the left-most column of the area is not truncated vertically.

Example

(1) Enlarge the first vertical pane by 30 pixels.

```
   C_LONGINT($Size)  `Size of the first vertical pane

   $Size:=PV Get vert pane property (Area;1;pv pane size in pixels )
⇒  PV SET VERT PANE PROPERTY  (Area;1;pv pane size in pixels ;$Size+30)   `30 pixels more
```

(2) Scroll the first pane by 50 pixels from the origin.

```
⇒  PV SET VERT PANE PROPERTY  (Area;1;pv pane true scroll ;50)
```

See Also

PV Get vert pane property, PV SET HOR PANE PROPERTY.

Constants

PV Pane properties theme.

PV SET HOR PANE PROPERTY

version 6.8

PV SET HOR PANE PROPERTY (area; pane; property; value)

Parameter	Type		Description
area	Longint	→	4D View area
pane	Integer	→	Horizontal pane number
property	Longint	→	Property number
value	Longint	→	Property value

Description

The command PV SET HOR PANE PROPERTY sets the property value of the property of the horizontal pane of area whose number is pane.

The PV Pane properties constants are used to define the properties.

The pv pane true scroll and pv pane relative scroll constants allow you to scroll vertically the contents of the horizontal pane whose number is pane:
• The pv pane true scroll allows scrolling the contents of the pane by value pixels starting from the origin of area (i.e. the first cell), regardless of the current position of the scrolling cursor.
• The pv pane relative scroll allows scrolling the contents of the pane by value pixels starting from the current position of the scrolling cursor.
Note that scrolling in pixels is adjusted so that the upper-most row of the area is not truncated horizontally.

Example

Enlarge the first horizontal pane by 30 pixels.

```
   C_LONGINT($Size)  `Size of the first horizontal pane

   $Size:=PV Get hor pane property (Area;1;pv pane size in pixels )
⇒  PV SET HOR PANE PROPERTY  (Area;1;pv pane size in pixels ;$Size+30)  `30 pixels more
```

See Also

PV Get hor pane property, PV SET VERT PANE PROPERTY.

Constants

PV Pane properties theme.

PV Get vert pane property

PV Panes

version 6.8

PV Get vert pane property (area; pane; property) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
pane	Integer	→	Vertical pane number
property	Longint	→	Property number
Function result	Longint	←	Property value

Description

The command PV Get vert pane property returns the current value of the property of the vertical pane of area whose number is pane.

The PV Pane properties constants are used to define the properties.

Note: The pv pane relative scroll constant can only be used with "PV SET..." commands.

Example

Refer to the example for the PV SET VERT PANE PROPERTY command.

See Also

PV Get hor pane property, PV SET VERT PANE PROPERTY.

Constants

PV Pane properties theme.

PV Get hor pane property

PV Panes

version 6.8

PV Get hor pane property (area; pane; property) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
pane	Integer	→	Horizontal pane number
property	Longint	→	Property number
Function result	Longint	←	Property value

Description

The command PV Get hor pane property returns the current value of the property of the horizontal pane of area whose number is pane.

The PV Pane properties constants are used to define the properties.

Note: The pv pane relative scroll constant can only be used with "PV SET..." commands.

Example

Refer to the examples for the PV ADD HOR PANE and PV SET HOR PANE PROPERTY commands.

See Also

PV Get vert pane property, PV SET HOR PANE PROPERTY.

Constants

PV Pane properties theme.

11

PV Pictures

PV Pictures, introduction

PV Pictures

version 6.8

The commands and functions in this theme allow you to manipulate pictures in your 4D View areas.

Using programming, you can insert or delete pictures. These commands also allow you to get or modify properties of any picture. By modifying picture properties, you can alter its appearance as well as transparency, size and position.

Picture position

A picture pasted by programming is automatically positioned in relation to the upper left-hand corner of the active cell. However, the picture is not inserted in the cell, it is positioned above it. A picture is attached to the document, not the cell. The column and row sizes are not adjusted to the size of the picture.

About picture numbers

All commands in this theme refer to pictures inserted in 4D View areas using the PicNum parameter. This parameter is the index number of the picture in the area: it is attributed by 4D View when the picture is inserted. Each picture inserted receives an index number that is either added by programming or by the user.

This number is unique for the area but is not absolute: if a picture is deleted in an area, all pictures with an index superior to that of the deleted picture will see their number decrease.

To see the number of pictures pasted in a 4D View area at any time, use the PV Get document property command and the pv picture number constant.

PV Add picture

PV Add picture (area; picture{; expression{; tableNum{; fieldNum}}}) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
picture	Picture	→	4D picture
expression	String	→	Any expression that returns a 4D picture
tableNum	Integer	→	Table number
fieldNum	Integer	→	Field number
Function result	Longint	←	Picture number

Description

The PV Add picture command pastes a 4D picture at the position of the current cell of area and returns its unique ID number. This identifier can then be used with other commands in the "PV Pictures" theme.

The picture must be a valid 4D picture. It can proceed from one of the following sources:
• a **picture variable**. In this case, pass the variable name in the picture parameter. Other parameters can be omitted.
• a **4D expression**. In this case, pass the expression name in the expression parameter (the picture parameter is not used and the last parameters can be omitted). The expression parameter can contain for example the name of a 4D method that returns a picture variable or a Picture field reference ("[Table]PictureField").
• a **picture field number**. In this case, pass the table and field number in the tableNum and fieldNum parameters (picture and expression parameters are not used).

4D View keeps the dynamic reference between the picture pasted into the area and the source picture. Any modification carried out on the source picture in 4D will be reflected in the picture pasted into the area.

Example

Paste in the current cell of a 4D View area the photo of the client whose record is current:

```
C_LONGINT($PicRef)  `Added picture reference
C_PICTURE($Picture)  `Empty picture (ignored)

⇒  $PicRef:=PV Add picture  (Area;$Picture;"";Table(->[Clients]);Field(->[Clients]Photo))
```

See Also

PV Get picture, PV REMOVE PICTURE.

PV REMOVE PICTURE

PV REMOVE PICTURE (area; picNum)

Parameter	Type		Description
area	Longint	→	4D View area
picNum	Longint	→	Picture number

Description

The command PV REMOVE PICTURE removes the picture number picNum from the area.

Note: Once a picture is deleted from a 4D View area, other pictures in the area will be renumbered if their index number was greater than that of the deleted picture. For more information, refer to the PV Pictures, Introduction section.

Example

Delete the first picture added to a 4D View area:

```
⇒ PV REMOVE PICTURE (Area;1)
```

See Also

PV Add picture.

PV Get picture

PV Get picture (area; picNum) → Picture

Parameter	Type		Description
area	Longint	→	4D View area
picNum	Longint	→	Picture number
Function result	Picture	←	Picture

Description

The command PV Get picture returns the picture number picNum in area.

Example

Recopy picture number 1 into the current cell.

```
C_LONGINT($PicRef) `Added picture reference
C_PICTURE($picNum) `Picture to recopy

⇒ $Picture:=PV Get picture (Area;1) `Picture number 1
  $PicRef:=PV Add picture (Area;$picNum;0;0) `Recopy in the current cell
```

See Also

PV Add picture.

PV Create picture

PV Pictures

version 6.8

PV Create picture (area; left; top; right; bottom; ignoreEmptyCells) → Picture

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint	→	Column number of left cell
top	Longint	→	Line number of top cell
right	Longint	→	Column number of right cell
bottom	Longint	→	Line number of bottom cell
ignoreEmptyCells	Integer	→	0 = Do not ignore empty cells; 1 = Ignore empty cells
Function result	Picture	←	Picture of cells in the range

Description

The command PV Create picture returns a picture of the cell range assigned by the left, top, right, and bottom parameters.

If the ignoreEmptyCells parameter is set to 1, only non-empty cells will be a part of the picture. The frame assigned by the left, top, right and bottom parameters will be reduced if the coordinates of the last non-empty cell (to the bottom on the right) are less then than the right and bottom coordinates of the specified frame.

Example

The line below records a view of the content of the cells delimited by B2, E2, B5, and E5 in a picture field.

```
      `Get picture and assign field
⇒     [Templates]ReducedView:=PV Create picture (Area;2;2;5;5;0)
```

See Also

PV COPY TO BLOB.

PV SET PICTURE PROPERTY

PV SET PICTURE PROPERTY (area; picNum; property; value)

Parameter	Type		Description
area	Longint	→	4D View area
picNum	Longint	→	Picture number
property	Longint	→	Property number
value	Longint	→	Property value

Description

The command PV SET PICTURE PROPERTY sets the property value of the picture number picNum for the specified property.

The PV Picture properties constants are used to define the property parameter.

You can also use the PV Picture mapping mode constant theme to define the value parameter.

Example

Set the display format of picture number 1 to "scaled centered":

```
⇒  PV SET PICTURE PROPERTY (Area;1;pv picture mapping mode ;
                                   pv mapping scaled centered prop )
```

See Also

PV Get picture property.

Constants

PV Picture properties and PV Picture mapping mode themes.

PV Get picture property

PV Pictures

version 6.8

PV Get picture property (area; picNum; property) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
picNum	Longint	→	Picture number
property	Longint	→	Property number
Function result	Longint	←	Property value

Description

The command PV Get picture property returns the value of property for the picture of area set by picNum.

The PV Picture properties constants are used to define the properties.

You can also use the PV Picture mapping mode theme to compare the returned value, once you pass the pv picture mapping mode value in the property parameter.

Example

This method displays information relating to picture number 1.

```
C_INTEGER($Index)  `Loop index for properties arrays
C_LONGINT($Value)  `Value corresponding to the option
ARRAY STRING($PropertiesCodes;12)  `Properties codes
ARRAY STRING(80;$PropertiesLabels;12)  `Properties labels

      `Initialize properties arrays
   $PropertiesCodes{1}:=pv picture column
   $PropertiesLabels{1}:="Reference column"
   $PropertiesCodes{2}:=pv picture row
   $PropertiesLabels{2}:="Reference row"
   $PropertiesCodes{3}:=pv picture horz offset
   $PropertiesLabels{3}:="Décalage H"
   $PropertiesCodes{4}:=pv picture vert offset
   $PropertiesLabels{4}:="V offset"
   $PropertiesCodes{5}:=pv picture data width
   $PropertiesLabels{5}:="Real width"
   $PropertiesCodes{6}:=pv picture data height
   $PropertiesLabels{6}:="Real height"
   $PropertiesCodes{7}:=pv picture display width
   $PropertiesLabels{7}:="Display width"
```

```
$PropertiesCodes{8}:=pv picture display height
$PropertiesLabels{8}:="Display height"
$PropertiesCodes{9}:=pv picture background
$PropertiesLabels{9}:="Background"
$PropertiesCodes{10}:=pv picture mapping mode
$PropertiesLabels{10}:="Mapping"
$PropertiesCodes{11}:=pv picture fixed size
$PropertiesLabels{11}:="Sixed size"
$PropertiesCodes{12}:=pv picture locked
$PropertiesLabels{12}:="Locked"

$PictureInfo:="Picture number 1 information:"+Character(Carriage return)
For ($Index;1;12)  `Review the different properties
      `Read property
⇒     $Value:=PV Get picture property (Area;1;$PropertiesCodes{$Index})
      `Update info
   $PictureInfo:=$PictureInfo+$PropertiesLabels{$Index}+" : "+String($Value)+". "
End for

ALERT($PictureInfo)  `Display info
```

See Also

PV SET PICTURE PROPERTY.

Constants

PV Picture properties and PV Picture mapping mode themes.

12

PV Printing

PV Printing, Introduction

The commands in this theme control printing spreadsheets using programming in 4th Dimension. You can set or get printing parameters (headers, footnotes, etc.) and choose printing values or formulas.

These commands are especially useful when you want to print a document without the user selecting the **Print** command in the **File** menu.

PV PRINT (area)

Parameter	Type		Description
area	Longint	→	4D View area

Description

The command PV PRINT prints the 4D View area passed as a parameter.

The page settings and print preview are accessible using the command PV EXECUTE COMMAND associated with the pv cmd print page setup and pv cmd print preview constants.

Pay attention to the 4D View area refresh option: if the refresh is not automatic, do not forget to execute it before printing or previewing the print area.

Example

Print with footer settings.

```
   PV SET HEADER (Area;pv footer center;" #D" Printed) `Assigning page footer
   CONFIRM("Print values or formulas?";"Formulas";"Values")
   If (OK=1)
      PV PRINT FORMULAS (Area) `Print formulas
   Else
⇒     PV PRINT (Area) `Print values
   End if
```

See Also

PV PRINT FORMULAS.

PV PRINT FORMULAS

PV PRINT FORMULAS (area)

Parameter	Type		Description
area	Longint	→	4D View area

Description

The command PV PRINT FORMULAS prints a report of all formulas used in the 4D View area passed as a parameter.

Example

Refer to the example for the PV PRINT command.

See Also

PV PRINT.

PV SET HEADER

PV Printing

version 6.8

PV SET HEADER (area; header; string)

Parameter	Type		Description
area	Longint	→	4D View area
header	Longint	→	Header position
string	String	→	String to place in the header

Description

The command PV SET HEADER sets the character string as a header or footer for area in the area set by header.

header is defined in PV Headers & footers constants to define the header parameter.

You can insert the following special characters in the string parameter:

#d	Current date abbreviated	Wed, Apr 3, 1996
#∂ (Macintosh)	Current date in short form	04/03/1996
#c (Windows)	Forced special	04/03/1996
#D	Current date in long form	Wednesday, April 3, 1996
#p	Page number	2
#h	Time without seconds	09:42
#H	Time with seconds	09:42:47
#F	Table or area name	Forecast (SP) or _Forecast
#P	Total page number	10

Example

Refer to the examples for the PV PRINT and PV Get header commands.

See Also

PV Get header.

Constants

PV Headers & footers theme.

PV Get header

PV Get header (area; header) → String

Parameter	Type		Description
area	Longint	→	4D View area
header	Longint	→	Header position
Function result	String	←	Header string

Description

The command PV Get header returns the header or footer string in the location set by header.

header is defined in PV Headers & footers constants to define the header parameter.

Example

Transfer the text from the center header to the page footer:

```
   C_TEXT($Header)  `Center header text

⇒  $Header:=PV Get header (Area;pv header center)  `Get center header
   PV SET HEADER (Area;pv header center ;"")  `Empty header
   PV SET HEADER (Area;pv footer center ;$Header)  `Pass to footer
   PV PRINT (Area)
```

See Also

PV SET HEADER.

Constants

PV Headers & footers theme.

PV SET PRINT PROPERTY

PV Printing

version 2004.1 (Modified)

PV SET PRINT PROPERTY (area; property; value{; value2})

Parameter	Type		Description
area	Longint	→	4D View area
property	Longint	→	Property number
value	Longint	→	Value of the property
value2	String	→	Additional property value

Description

The PV SET PRINT PROPERTY command sets the value and, optionally, the value2 of the property for the specified 4D View area.

Use the PV Print properties constants to define the property parameter. The following list details the constants which can be used in both the property and value parameters:

pv print left margin

The left margin is the area between the left side of the paper (including the left dead margin) and the text. Associated values: margin in pixels.

pv print top margin

The top margin is the area between the top side of the paper (including the top dead margin) and the header. Associated values: margin in pixels.

pv print right margin

The right margin is the area between the right side of the paper (including the right dead margin) and the text. Associated values: margin in pixels.

pv print bottom margin

The bottom margin is the area between the bottom side of the paper (including the bottom dead margin) and the footer. Associated values: margin in pixels.

Note: See below for more information regarding dead margins.

pv print repeat first column

Indicates the number of the first column of the range to be printed on each page. This constant must be used in combination with the pv print repeat last column constant. Associated values: column number.

pv print repeat last column

Indicates the number of the last column of the range to be printed on each page. This constant must be used in combination with the pv print repeat first column constant. Associated values: column number.

pv print repeat first row

Indicates the number of the first row of the range to be printed on each page. This constant must be used in combination with the pv print repeat last row constant. Associated values: row number.

pv print repeat last row

Indicates the number of the last row of the range to be printed on each page. This constant must be used in combination with the pv print repeat first row constant. Associated values: row number.

pv print headers

Allows printing (or not) of the row and column headers. Associated values: pv value on or pv value off
- pv value on: row and column headers are printed.
- pv value off: row and column headers are not printed.

pv print centered

Allows centering (or not) of the printing on the page. Associated values: pv value on or pv value off
- pv value on: the printing is centered on the page.
- pv value off: the printing is not centered on the page.

pv print adjust area

Allows adjusting (or not) of the printable area. Associated values: pv value on or pv value off
- pv value on: the printable area is adjusted.
- pv value off: the printable area is not adjusted.

pv print frame each page

Allows printing of a frame (or not) around each printed page. Associated values: pv value on or pv value off
- pv value on: a frame is printed on each page.
- pv value off: no frame is printed.

pv print grid

Allows printing (or not) of a grid on the area. Associated values: pv value on or pv value off
- pv value on: the grid is printed.
- pv value off: the grid is not printed.

pv print orientation

Allows setting or reading paper orientation at the time of printing. Associated values: PV Print values theme constants.
• pv portrait orientation: the paper is oriented in portrait mode.
• pv landscape orientation: the paper is oriented in landscape mode.

pv print paper width

Returns the paper width. Associated values: width in pixels.

pv print paper height

Returns the paper height. Associated values: height in pixels.

pv print dead left margin

This constant is read-only (PV Get print property command) and returns the size, in pixels, of the left dead margin.

pv print dead top margin

This constant is read-only (PV Get print property command) and returns the size, in pixels, of the top dead margin.

pv print dead right margin

This constant is read-only (PV Get print property command) and returns the size, in pixels, of the right dead margin.

pv print dead bottom margin

This constant is read-only (PV Get print property command) and returns the size, in pixels, of the bottom dead margin.

Note: The dead margin is the non-printable area located at the edges of the paper. This area is set by the print drive.

pv print scale

Used to set or get the current print scale. Keep in mind, however, that some printers do not allow you to modify the scale. If you pass an invalid value, the property is reset to 100% at the time of printing. Associated values: print scale.

pv print number copies

Used to set or get the number of copies to be printed. Associated values: number of copies (1 by default).

pv print paper source

Used to set or get the paper tray to be used. Associated values: number corresponding to the index, in the array of trays returned by the 4D PRINT OPTION VALUES command, of the paper tray to be used.

Note: This property can only be used under Windows.

pv print color

Used to set or get the mode for handling color. This property is only useful with color printers. Associated values: constants of the "PV Print values" theme:
• pv black and white: printing in black and white (monochrome).
• pv color: printing in color.

Note: This property can only be used under Windows.

pv print destination

Used to set or get the print destination. Associated values: constants of the PV Print values theme beginning with "pv destination":
• pv destination printer: the print job is sent to the printer.
• pv destination file (Windows only): the print job is sent to a file. When this constant is used, value2 contains the pathname for the resulting document. If you pass an empty string in value2 or omit this parameter, a save file dialog box will appear at the time of printing.
• pv destination PDF file (MacOS only): the print job is sent to a PDF file. When this constant is used, value2 contains the pathname for the resulting PDF document. If you pass an empty string in value2 or omit this parameter, a save file dialog box will appear at the time of printing.
• pv destination EPS file (MacOS only): the print job is sent to an EPS file. When this constant is used, value2 contains the pathname for the resulting EPS document. If you pass an empty string in value2 or omit this parameter, a save file dialog box will appear at the time of printing.

pv print double sided

Used to print as single- or double-sided. Associated values: pv value on or pv value off constants.
• pv value on: double-sided printing.
• pv value off: single-sided printing (default value).

Note: This property can only be used under Windows.

pv print binding

Used to set or get the location of the binding when printing is carried out in double-sided mode (see above). Associated values: constants of the "PV Print values" theme:
• pv left binding: left binding (default value).
• pv top binding: top binding.

Note: This property can only be used under Windows.

pv print document name

Used to set or get the name of the print document that must appear in the list of spooler documents. When this constant is used, value2 contains the name of the print document. Pass 0 in value.
To use or restore standard operation (use of the name "4D View"), pass an empty string in value2.

pv print pages from

Used to set or get the number of the page where you want printing to start.
Associated values: page number.

pv print pages to

Used to set or get the number of the last page that you want to be printed.
Associated values: page number.

Example

Example for choosing the paper tray (source) under Windows:

```
ARRAY TEXT($arrNames;0)
ARRAY LONGINT($arrInfo1;0)

      `Retrieval of the list of available trays
PRINT OPTION VALUES(Paper source;$arrNames;$arrInfo1)
```

Here is what you could retrieve, for example in the *$arrNames* and *$arrInfo1* arrays:

$arrNames	$arrInfo1	Index
Automatic Selection	15	1
Tray 1	257	2
Tray 1 (Manual)	258	3
Tray 2	259	4
Tray 3	260	5
Tray 4	261	6
Envelope Feeder	262	7

If you want to use "Tray 1 (Manual)," you just need to pass the index corresponding to this tray:

```
⇒  PV SET PRINT PROPERTY(area; pv print paper source;3)
```

See Also

PV Get print property.

Constants

PV Print properties and PV Print values theme.

pv print document name

Used to set or get the name of the print document that must appear in the list of spooler documents. When this constant is used, value2 contains the name of the print document. Pass 0 in value.
To use or restore standard operation (use of the name "4D View"), pass an empty string in value2.

pv print pages from

Used to set or get the number of the page where you want printing to start.
Associated values: page number.

pv print pages to

Used to set or get the number of the last page that you want to be printed.
Associated values: page number.

Example

Example for choosing the paper tray (source) under Windows:

```
ARRAY TEXT($arrNames;0)
ARRAY LONGINT($arrInfo1;0)

    `Retrieval of the list of available trays
PRINT OPTION VALUES(Paper source;$arrNames;$arrInfo1)
```

Here is what you could retrieve, for example in the *$arrNames* and *$arrInfo1* arrays:

$arrNames	**$arrInfo1**	**Index**
Automatic Selection	15	1
Tray 1	257	2
Tray 1 (Manual)	258	3
Tray 2	259	4
Tray 3	260	5
Tray 4	261	6
Envelope Feeder	262	7

If you want to use "Tray 1 (Manual)," you just need to pass the index corresponding to this tray:

```
⇒  PV SET PRINT PROPERTY(area; pv print paper source;3)
```

See Also

PV Get print property.

Constants

PV Print properties and PV Print values theme.

PV Get print property

PV Printing

version 2004.1 (Modified)

PV Get print property (area; property{; value2}) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
property	Longint	→	Property number
value2	String	←	Additional property value
Function result	Longint	←	Property value

Description

The PV Get print property command returns the current value of the property for the specified 4D View area. The optional value2 parameter can return additional information with certain print properties.

Use the PV Print properties constants to define the property parameter. For more information about these constants, see the description of the PV SET PRINT PROPERTY command.

Note: The four constants starting with "pv print dead..." are read-only.

Example

We want to know the actual printable surface:

```
C_LONGINT($paperWidth;$paperHeight)
C_LONGINT($bottomMargin;$topMargin;$rightMargin;$leftMargin)
C_LONGINT($usableWidth;$usableHeight)

⇒ $paperWidth:=PV Get print property(area; pv print paper width)
⇒ $paperHeight:=PV Get print property(area; pv print paper height)

⇒ $bottomMargin:=PV Get print property(area; pv print dead bottom margin)
⇒ $topMargin:=PV Get print property(area; pv print dead top margin)
⇒ $rightMargin:=PV Get print property(area; pv print dead right margin)
⇒ $leftMargin:=PV Get print property(area; pv print dead left margin)

$usableWidth:=$paperWidth-($rightMargin+$leftMargin)
$usableHeight:=$paperHeight-($topMargin+$bottomMargin)
```

See Also

PV SET PRINT PROPERTY.

Constants

PV Print settings to blob

PV Print settings to blob (area) → BLOB

Parameter	Type		Description
area	Longint	→	4D View area
Function result	BLOB	←	BLOB which stores the print settings

Description

The PV Print settings to blob command stores the current print settings of the 4D View area in a BLOB.

The BLOB stores all the settings used for printing:
• Layout parameters (paper, orientation, scale);
• Print parameters as such (number of copies, paper source, etc.).

On the other hand, the command does not store the print options specific to the 4D View plug-in (page headers, repetition of rows, etc.) that are found in the "Printing Options" dialog box.

This command can be used to save the print settings of the 4D View area, regardless of the printer model and accessible print settings. The BLOB returned must not be modified by programming; it can only be used by the PV BLOB TO PRINT SETTINGS command.

The PV Print settings to blob command can be used for example to save the current print settings before modifying an option temporarily using the PV SET PRINT PROPERTY command. Once printing is complete, the PV BLOB TO PRINT SETTINGS command can be used to restore the current parameters.

See Also

PV BLOB TO PRINT SETTINGS.

PV BLOB TO PRINT SETTINGS (area; printSettings)

Parameter	Type		Description
area	Longint	→	4D View area
printSettings	BLOB	→	BLOB containing the print settings

Description

The PV BLOB TO PRINT SETTINGS command replaces the current print settings of the 4D View area by those contained in the printSettings BLOB. This BLOB must have been generated by the PV Print settings to blob command.

The printSettings parameter contains all the settings used for printing:
• Layout parameters (paper, orientation, scale);
• Print parameters as such (number of copies, paper source, etc.).

Note: Print settings are not formatted in the same way under Windows and MacOS. As a result, the compatibility of the printSettings BLOB between the two platforms is not guaranteed.

If the printSettings BLOB does not contain valid print settings, the command returns an error.

See Also

PV Print settings to blob.

13

PV Selection

PV Selection, Introduction

The commands in this theme allow:

- Selecting a set of cells (adjacent selection or not), row(s), or column(s)
- To see the current selection of a 4D View area.

Selections and cell ranges

Depending on the commands, cell selections can be adjacent (ranges) or isolated.

A **cell range** is a set of continuous cells, for example A1, A2, B1, B2. A range is not necessarily selected.

A **selection of cells** is the set of cells in a highlighted selection, for example A1, A2, B1, B2, C15.
A selection can contain one or more ranges as well as one or more isolated cells, or quite simply one or more isolated cells.

When a new 4D View area is opened, the cursor is located on a cell, as in any spreadsheet, but it is not selected if the user or developer did not explicitly specify it with a mouse click or another selection action/command.

PV SELECT CELL

PV SELECT CELL (area; column; row; action)

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
action	Integer	→	Select action

Description

The command PV SELECT CELL selects the cell located at the intersection of column and row.

The action parameter allows defining the selection action that you want to execute when a selection of cells already exists: you can create a new selection or add the cell to the selection.

action is defined in PV Selection action constants.

Example

We want to select the cell E2. The selection action will depend on the context (already selected cells):

```
      `Arrays defining the existing selection:
   ARRAY LONGINT($Left;0)  `Left-hand cell column numbers
   ARRAY LONGINT($Top;0)  `Top cell row numbers
   ARRAY LONGINT($Right;0)  `Right-hand cell column numbers
   ARRAY LONGINT($Bottom;0)  `Bottom cell row numbers

   PV GET SELECTED RANGES LIST (Area;$Left;$Top;$Right;$Bottom)  `Get selected ranges if any

   If (Size of array($Left)=0)  `No current selection
⇒     PV SELECT CELL (Area;5;2;pv selection set )  `Set E2 cell as current selection
   Else
⇒     PV SELECT CELL (Area;5;2;pv selection add )  `Add E2 cell to current selection
   End if
```

See Also

PV Is cell selected.

Constants

PV Selection action theme.

PV Is cell selected

PV Selection

version 6.8

PV Is cell selected (area; column; row) → Integer

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Cell column number
row	Longint	→	Cell row number
Function result	Integer	←	0 = Not selected, 1 = Selected

Description

The command PV Is cell selected returns 1 if the cell of area set by column and row is part of the current selection, otherwise 0 is returned.

Example

Refer to the example for the PV SELECT CELL command.

See Also

PV SELECT CELL.

PV SELECT RANGE

PV Selection

version 6.8

PV SELECT RANGE (area; left; top; right; bottom; action)

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint	→	Column number of left cell
top	Longint	→	Row number of top cell
right	Longint	→	Column number of right cell
bottom	Longint	→	Row number of bottom cell
action	Integer	→	Select action

Description

The command PV SELECT RANGE selects the range of cells defined by left, top, right and bottom coordinates.

The action parameter allows defining the selection action that you want to execute when a selection of cells already exists: you can add the cell to the selection or reduce the selection to the cell. action is defined using the PV Selection action constants.

Example

We want to select the range of cells E2, E3, F2, F3. The selection action will depend on the context (already selected cells):

```
   `Arrays defining the existing selection:
ARRAY LONGINT($Left;0)  `Left-hand cell column numbers
ARRAY LONGINT($Top;0)  `Top cell row numbers
ARRAY LONGINT($Right;0)  `Right-hand cell column numbers
ARRAY LONGINT($Bottom;0)  `Bottom cell row numbers
   `Get selected ranges if any
PV GET SELECTED RANGES LIST (Area;$Left;$Top;$Right;$Bottom)

If (Size of array($Left)=0)  `No current selection
⇒    PV SELECT RANGE (Area;5;2;6;3;pv selection set )  `Set the range as current selection
Else
⇒    PV SELECT RANGE (Area;5;2;6;3;pv selection add )  `Add the range to current selection
End if
```

See Also

PV GET CURRENT CELL, PV Is range selected.

Constants

PV Selection action theme.

PV Is range selected

PV Selection

version 6.8

PV Is range selected (area; left; top; right; bottom) → Integer

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint	→	Column number of left cell
top	Longint	→	Row number of top cell
right	Longint	→	Column number of right cell
bottom	Longint	→	Row number of bottom cell
Function result	Integer	←	0 = Not selected, 1 = Selected

Description

The command PV Is range selected returns 1 if the range of cells defined by the left, top, right, and bottom parameter is part of the current selection, otherwise, it returns 0.

Example

Refer to the example for the PV SELECT RANGE command.

See Also

PV SELECT RANGE.

PV SELECT RANGES LIST

PV Selection

version 6.8

PV SELECT RANGES LIST (area; left; top; right; bottom; action)

Parameter	Type		Description
area	Longint	→	4D View area
left	Array	→	Column numbers array of left cells
top	Array	→	Row numbers array of top cells
right	Array	→	Column numbers array of right cells
bottom	Array	→	Row numbers array of bottom cells
action	Integer	→	Select action

Description
This command is similar to the PV SELECT RANGE, except that it applies to several cell ranges whose coordinates are saved in the left, top, right, and bottom arrays.

action is defined in PV Selection action constants (for more information, refer to the description of the PV SELECT RANGE command).

Example
Provoke the selection of five ranges of increasing sizes using programming.

```
C_INTEGER($Index)  `Loop index
C_INTEGER($Number)  `Number of ranges
$Number:=5  `The group of five in the range
ARRAY LONGINT($Left;5)
ARRAY LONGINT($Top;5)
ARRAY LONGINT($Right;5)
ARRAY LONGINT($Bottom;5)
   `Initialization
For ($Index;1;5)
   $Left{$Index}:=$Index*3  `Left limits
   $Top{$Index}:=$Index*6  `Top limits
   $Right{$Index}:=$Index*4  `Right limits
   $Bottom{$Index}:=$Index*7  `Bottom limits
End for

⇒ PV SELECT RANGES LIST (Area;$Left;$Top;$Right;$Bottom;pv selection add)
```

See Also
PV GET SELECTED RANGES LIST.

Constants
PV Selection action theme.

PV GET SELECTED RANGES LIST

PV Selection

version 6.8

PV GET SELECTED RANGES LIST (area; left; top; right; bottom)

Parameter	Type		Description
area	Longint	→	4D View area
left	Longint array	←	Left cells column numbers array
top	Longint array	←	Top cells row numbers array
right	Longint array	←	Right cells column numbers array
bottom	Longint array	←	Bottom cell row numbers array

Description

The command PV GET SELECTED RANGES LIST gets, in arrays passed as parameters, the coordinates of the selected ranges in area.

Example

Refer to the examples for the PV SET CELL PROPERTY, PV SET RANGE PROPERTY, PV SELECT CELL, and PV SELECT RANGE commands.

See Also

PV FIND ALL, PV SELECT RANGES LIST.

PV SELECT COLUMNS

PV Selection

version 6.8

PV SELECT COLUMNS (area; first; last; action)

Parameter	Type		Description
area	Longint	→	4D View area
first	Longint	→	First selected column
last	Longint	→	Last selected column
action	Integer	→	Select action

Description

The command PV SELECT COLUMNS selects area columns between included column numbers first and last.

The action parameter allows defining the selection action that you want to execute when a selection of columns already exists: you can add the columns to the selection or reduce the selection to the columns. action is defined using the PV Selection action constants.

Example

We want to select both the column and the row of the current cell.

```
C_LONGINT($Column;$Row)  `To get coordinates
C_INTEGER($ColSelect;$OwSelect) `To know if the column/row are already selected

PV GET CURRENT CELL (Area;$Column;$Row) `Getting current cell coordinates
$ColSelect:=PV Is column selected (Area;$Column)
$RowSelect:=PV Is row selected (Area;$Row)

If ($ColSelect=0) `The column is not selected
⇒    PV SELECT COLUMNS (Area;$Column;$Column;pv selection add ) `Select it
End if

If ($RowSelect=0) `The row is not selected
   PV SELECT ROWS (Area;$Row;$Row;pv selection add ) `Select it
End if
```

See Also

PV Is column selected.

Constants

PV Selection action theme.

PV Is column selected

PV Selection

version 6.8

PV Is column selected (area; column) → Integer

Parameter	Type		Description
area	Longint	→	4D View area
column	Longint	→	Column number
Function result	Integer	←	0 = Not selected, 1 = Selected

Description

The command PV Is column selected returns 1 if the area column number column is part of the current selection. Otherwise, 0 is returned.

Example

Refer to the example for the PV SELECT COLUMNS command.

See Also

PV SELECT COLUMNS.

PV SELECT ROWS

PV Selection

version 6.8

PV SELECT ROWS (area; first; last; action)

Parameter	Type		Description
area	Longint	→	4D View area
first	Longint	→	First selected row
last	Longint	→	Last selected row
action	Integer	→	Select action

Description

The command PV SELECT ROWS selects the area rows included between row numbers first and last.

The action parameter allows defining the selection action that you want to execute when a selection of rows already exists: you can add the rows to the selection or reduce the selection to the rows. action is defined using the PV Selection action constants.

Example

See the example for the command PV SELECT COLUMNS.

See Also

PV Is row selected.

Constants

PV Selection action theme.

PV Is row selected

PV Selection

version 6.8

PV Is row selected (area; row) → Integer

Parameter	Type		Description
area	Longint	→	4D View area
row	Longint	→	Row number
Function result	Integer	←	0 = Not selected, 1 = Selected

Description

The command PV Is row selected returns 1 if the area row number row is part of the current selection. Otherwise, 0 is returned.

Example

Refer to the example for the PV SELECT COLUMNS command.

See Also

PV SELECT ROWS.

PV Is all selected

PV Selection

version 6.8

PV Is all selected (area) → Integer

Parameter	Type		Description
area	Longint	→	4D View area
Function result	Integer	←	0 = Not selected, 1 = Selected

Description

The command PV Is all selected returns 1 if the set of cells of area is selected. Otherwise, 0 is returned.

See Also

PV SELECT ALL.

PV SELECT ALL

version 6.8

PV SELECT ALL (area)

Parameter	Type		Description
area	Longint	→	4D View area

Description

The command PV SELECT ALL selects all the cells in area.

See Also

PV Is all selected.

14

PV Style

PV Style, Introduction

The commands and functions of this theme allow controlling styles associated with a 4DView area.

They give access to existing style sheets and allow modifying, by programming, each format property: display formats, available fonts, colors and attributes.

Finally, these commands allow controlling the application and updating style sheets within your documents.

Style sheets

In 4D View, style sheets are accessible using their reference number, in the form of a long integer.

By default, there are three permanent types of style sheets:

- Row/Column headers
- Cells
- Headers and footers

You can create, modify or delete your own style sheets, linking to a specific area. They are then saved with the 4D View area, either in an external document or within the 4th Dimension data itself.

Character fonts

By default, all system fonts are available in a 4D View area. However, certain commands allow managing fonts that can or cannot be used in a 4D View area. To delete a font in 4D View means that it is unusable within the concerned area. It will no longer be possible to call the font from the area, however, it will still be available for other 4D View areas, as well as in 4D and other applications.

Formats

Just like in 4th Dimension, formats are applied during information display.
For more information on how to define display fomats, refer to the 4D *Design Reference* manual.

PV Add style

PV Style

version 6.8

PV Add style (area; name) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
name	String	→	Stylesheet name
Function result	Longint	←	Stylesheet ID

Description

The command PV Add style adds a style sheet to area using the name parameter and returns its ID.

If the name for this style sheet already exists, the PV ADD STYLE command returns its ID (this number can also be obtained using the PV GET STYLE LIST command).

Example

Please refer to the example for the PV SET STYLE PROPERTY command.

See Also

PV GET STYLE LIST, PV Get style property, PV REMOVE STYLE, PV SET STYLE NAME, PV SET STYLE PROPERTY.

PV REMOVE STYLE

PV Style

version 6.8

PV REMOVE STYLE (area; stylesheet)

Parameter	Type		Description
area	Longint	→	4D View area
stylesheet	Longint	→	Stylesheet ID

Description

The command PV REMOVE STYLE removes the stylesheet from area.

Note: Only styles added in the area can be removed.

Example

This method allows removing any unwanted style.

```
C_STRING(255;$StyleName) `Name of forbidden style for Area

ARRAY LONGINT($StyleNumArray;0) `Style numbers array
ARRAY STRING(255;$StyleNameArray;0) `Style names array

C_INTEGER($Position) `Position of illegal style in number and name arrays

$StyleName:="subparagraph" `We do not want the style "Subparagraph"

PV GET STYLE LIST (Area;$StyleNumArray;$StyleNameArray) `List of available styles

$Position:=Find in array($StyleNameArray;$StyleName) `Search for illegal style
If ($Position#-1) `Is the illegal style present in Area?
⇒    PV REMOVE STYLE (Area;$StyleNumArray{$Position}) `Remove it
End if
```

See Also

PV Add style.

PV SET STYLE NAME

PV Style

version 6.8

PV SET STYLE NAME (area; stylesheet; name)

Parameter	Type		Description
area	Longint	→	4D View area
stylesheet	Longint	→	Stylesheet ID
name	String	→	Stylesheet name

Description

The command PV SET STYLE NAME renames the stylesheet with the character string passed in the name parameter.

Example

This method allows you to rename a style.

```
C_STRING(255;$StyleName) `Name of style to rename in Area
C_STRING(255;$NewName) `New name to assign to the style in Area

ARRAY LONGINT($StyleNumArray;0) `Style numbers array
ARRAY STRING(255;$StyleNameArray;0) `Style names array

C_INTEGER($Position) `Position of the style to rename in the number and name arrays

$StyleName:="subparagraph" `We want to rename the style "subparagraph"...
$NewName:="Paragraph" `... to "Paragraph"

PV GET STYLE LIST (Area;$StyleNumArray;$StyleNameArray) `List of available styles

$Position:=Find in array($StyleNameArray;$StyleName) `Search for style to rename
If ($Position#-1) `Is the style to rename present in Area?
⇒    PV SET STYLE NAME (Area;$StyleNumArray{$Position};$NewName) `Rename it
Else
   ALERT("The style '"+$StyleName+"' is not present in the area.")
End if
```

See Also

PV Add style.

PV GET STYLE LIST

PV Style

version 6.8

PV GET STYLE LIST (area; stylesheets; names)

Parameter	Type		Description
area	Longint	→	4D View area
stylesheets	Array longint	←	Stylesheet IDs array
names	Array string	←	Stylesheet names array

Description

The command PV GET STYLE LIST gets, in stylesheets and names, the ID number and the name of each stylesheet present in area.

Example

Refer to the examples for the PV REMOVE STYLE, PV SET STYLE NAME, and PV SET STYLE PROPERTY commands.

See Also

PV Add style, PV REMOVE STYLE.

PV SET STYLE PROPERTY

PV Style

version 6.8

PV SET STYLE PROPERTY (area; style; property; value)

Parameter	Type		Description
area	Longint	→	4D View area
style	Longint	→	Stylesheet ID
property	Longint	→	Property number
value	Longint	→	Property value

Description

The command PV SET STYLE PROPERTY sets the value of property for the style sheets whose number is style.

Use the PV Style properties constants theme to define the property parameter.
Use the PV Style values constants theme to define the value parameter. The choice of constant to assign to the value parameter depends on the property chosen.
These constants are detailed in the PV SET CELL PROPERTY command description.

If you want to edit the default style sheets properties, pass one of the PV Style special values constants in the style parameter:
• pv style cells: default style sheet for cells (named “Cells”).
• pv style col row headers: default style sheet for column and row headers (named “Columns/Rows Headers”).
• pv style page footer header: default style sheet for printed page header and footer (named “Page Header & footer”.

Note: These style sheets can be edited using the **Style Sheets** command in the 4D View's **Style** menu.

Example

This method allows defining properties for a new style. In this example, we will set a value for each of the three style properties to customize:
• The "horizontal alignment" property will become "to the left",
• The "vertical alignment" property will become "center",
• The "rotation" property will become "90 degrees".

```
ARRAY LONGINT($ArrayProps;3)  `Stylesheet properties array
ARRAY LONGINT($ArrayValues;3)  `Value of each property

C_STRING(255;$StyleName)  `Name of style to add to Area

ARRAY LONGINT($StyleNumArray;0)  `Style numbers array
ARRAY STRING(255;$StyleNameArray;0)  `Style names array
```

```
C_INTEGER($Index) `Loop index
C_INTEGER($Position) `Position of new style in number and name arrays

   `Initialization
$ArrayProps{1}:=pv style hor alignment   `Corresponding properties...
$ArrayProps{2}:=pv style vert alignment
$ArrayProps{3}:=pv style rotation

$ArrayValues{1}:=pv value hor alignment left   `...and values
$ArrayValues{2}:=pv value hor alignment center
$ArrayValues{3}:=pv value rotation 90

$StyleName:="subparagraph"

PV GET STYLE LIST (Area;$StyleNumArray;$StyleNameArray) `List of available styles

If (Find in array($StyleNameArray;$StyleName)=-1) `Style $StyleName absent ?
   $Position:=Size of array($StyleNameArray)+1  `We will add it
   INSERT ELEMENT ($StyleNameArray;$Position) `Resize arrays
   INSERT ELEMENT ($StyleNumArray;$Position)
   $StyleNameArray{$Position}:=$StyleName `Assign name of new style
      `Assign number of new style
   $StyleNumArray{$Position}:=PV Add style (Area;$StyleName)

   For ($Index;1;Size of array($ArrayProps)) `For all properties to be set
      If (PV Get style property (Area;$StyleNumArray{$Position};$ArrayProps{$Index})
                                                          #$ArrayValues{$Index})
⇒        PV SET STYLE PROPERTY (Area;$StyleNumArray{$Position};
                                          $ArrayProps{$Index};$ArrayValues{$Index})
      End if  `Property doesn't have the desired value?
   End for  `Review array $ArrayProps of stylesheet properties

Else
   ALERT("The style'"+$StyleName+"' is already present in the area.")
End if
```

See Also

PV Get style property.

Constants

PV Style properties and PV Style values themes.

PV Get style property

PV Style

version 6.8

PV Get style property (area; style ; property) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
style	Longint	→	Stylesheet ID
property	Longint	→	Property number
Function result	Longint	←	Property value

Description

The command PV Get style property returns the current value of the stylesheet specified by style.

Use the PV Style properties constants theme to define the property parameter.

Use the PV Style values constants theme to define the value parameter.

Example

Refer to the example for the PV SET STYLE PROPERTY command.

See Also

PV SET STYLE PROPERTY.

Constants

PV Style properties and PV Style values themes.

PV Add font

PV Style

version 6.8

PV Add font (area; name) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
name	String	→	Font name
Function result	Longint	←	Font ID

Description

The command PV Add font adds a font to the area by its name and returns its ID.

If name already exists, the PV Add font command returns its ID (the number can also be obtained using the PV GET FONT LIST command).

For more information on how fonts associated with a 4D View area work, refer to the section PV Style, Introduction.

Example

This method also works with toggle: it removes a font from the 4D View area or associates it if it has already been removed.

```
C_STRING(255;$FontName) `Name of font to add/remove from Area
ARRAY LONGINT($FontNumArray;0) `Font numbers array
ARRAY STRING(255;$FontNameArray;0) `Font names array
C_INTEGER($Position) `Position of the font in the number and name arrays

$FontName:="Arial"
PV GET FONT LIST (Area;$FontNumArray;$FontNameArray) `List of available fonts
$Position:=Find in array($FontNameArray;$FontName)
If ($Position=-1) `$FontName font is unavailable for the area?
   $Position:=Size of array($FontNameArray)+1 `We will add it
   INSERT ELEMENT($FontNameArray;$Position) `Resize...
   INSERT ELEMENT($FontNumArray;$Position) `...arrays
   $FontNameArray{$Position}:=$FontName `Assign name of new font
⇒  $FontNumArray{$Position}:=PV Add font (Area;$FontName) `Assign font number
Else `$FontName font is already present in the area
   PV REMOVE FONT (Area;$FontNumArray{$Position}) `Remove it
End if
```

See Also

PV GET FONT LIST, PV REMOVE FONT.

PV REMOVE FONT

PV Style

version 6.8

PV REMOVE FONT (area; font)

Parameter	Type		Description
area	Longint	→	4D View area
font	Longint	→	Font ID

Description

The command PV REMOVE FONT removes the font from area.

Deleting a font with this command means that it will no longer be available in the concerned 4D View area. Of course, the font is not physically removed from the system.

Example

Refer to the example for the PV Add font command.

See Also

PV Add font, PV GET FONT LIST.

PV GET FONT LIST

PV Style

version 6.8

PV GET FONT LIST (area; fonts; names)

Parameter	Type		Description
area	Longint	→	4D View area
fonts	Array longint	←	Font IDs array
names	Array string	←	Font names array

Description

The command PV GET FONT LIST gets, in arrays fonts and names, the IDs and names of each font in area.

Example

Refer to the example for the PV Add font command.

See Also

PV Add font, PV REMOVE FONT.

PV Add format

PV Style

version 6.8

PV Add format (area; string) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
string	String	→	Format string
Function result	Longint	←	Format ID

Description

The command PV Add format adds the format string to the area and returns its ID.

If string already exists, the PV Add format command returns its ID (this number can also be obtained using the PV GET FORMAT LIST command).

Example

We want to remove the American monetary format available for the active area, but we must make sure that the European monetary format (Euros) is still available.

```
C_STRING(255;$OldFormat)  `Format string to remove from Area
C_STRING(255;$NewFormat)  `Format string to add to Area
ARRAY LONGINT($FormatNumArray;0)  `Format numbers array
ARRAY STRING(255;$FormatStringArray;0)  `Format strings array
C_INTEGER($Position)  `Position of the format to remove in number and name arrays

$OldFormat:="$###,##0.00"
$NewFormat:="### ##0,00 EUR"
   `List of available formats
PV GET FORMAT LIST (Area;$FormatNumArray;$FormatStringArray)
$Position:=Find in array($FormatStringArray;$OldFormat)
If ($Position#-1)  `Format to remove present in area?
   PV REMOVE FORMAT (Area;$FormatNumArray{$Position})  `Remove it
End if
   `Format to add unavailable in area?
If (Find in array($FormatStringArray;$NewFormat)=-1)
   $Position:=Size of array($FormatStringArray)+1  `We will add it
   INSERT ELEMENT($FormatStringArray;$Position)  `Resize...
   INSERT ELEMENT($FormatNumArray;$Position)  `...arrays
   $FormatStringArray{$Position}:=$NewFormat  `Assign new format
⇒  $FormatNumArray{$Position}:=PV Add format (Zone;$NewFormat)  `Assign number
End if
```

See Also

PV GET FORMAT LIST, PV REMOVE FORMAT.

PV REMOVE FORMAT

PV Style

version 6.8

PV REMOVE FORMAT (area; format)

Parameter	Type		Description
area	Longint	→	4D View area
format	Longint	→	Format ID

Description

The command PV REMOVE FORMAT removes the format from the area.

Only formats created using the PV Add format command can be removed. Native 4D View formats cannot be removed.

Example

Refer to the example for the PV Add format command.

See Also

PV Add format.

PV SET FORMAT

PV Style

version 6.8

PV SET FORMAT (area; format; string)

Parameter	Type		Description
area	Longint	→	4D View area
format	Longint	→	Format ID
string	String	→	Format string

Description

The PV SET FORMAT command changes the string format for format.

Example

Here is a simplified version of the PV Add format command example: the format, in this case, is abruptly replaced. The new format is not created if the old one is not present.

```
ARRAY LONGINT($ArrayFormatNum;0) `Format number(s) array
ARRAY STRING(255;$ArrayFormatStrings;0) `Format string(s) array
C_INTEGER($Position) `Position of format to modify in the number and name arrays

   `List of available formats
PV GET FORMAT LIST (Area;$ArrayFormatNum;$ArrayFormatStrings)

$Position:=Find in array($ArrayFormatStrings;"$###,##0.00")
If ($Position#-1) `Format available for the area?
      `Modifying format
⇒     PV SET FORMAT (Area;$ArrayFormatNum{$Position};"### ##0,00 EUR")
End if
```

See Also

PV Add format.

PV GET FORMAT LIST

PV Style

version 6.8

PV GET FORMAT LIST (area; formats; strings)

Parameter	Type		Description
area	Longint	→	4D View area
formats	Array longint	←	Format IDs array
strings	Array string	←	Format strings array

Description

The command PV GET FORMAT LIST gets in arrays formats and strings, the IDs and strings for each format present in area.

Example

Refer to the example for the PV Add format command.

See Also

PV Add format.

15

PV Drag and drop

Drag and Drop, Introduction

PV Drag and drop

version 2003 (Modified)

The commands and functions of this theme allow controlling drag and drop within the same 4D View area, between two 4D View areas or between a 4th Dimension area and a 4D View area.

In 4D View, drag and drop works on three principles:
• Source object (the area where the drag takes place).
• Target object (the area where the drop occurs).
• Signatures allowing whether or not to authorize the drag and drop between certain areas.

The commands in this theme will be used to identify the source and the target, as well as their signatures, and to get information on the location of the target area where it will be dropped.

It is up to you to use this information depending on your needs, using other 4D View commands, for example, by copying or cutting data from the source area, and pasting it in the target area once the operation's validity has been controlled, or by executing a different operation of your choice.

Dragging-dropping of 4D objects
4D View allows the dragging and dropping of 4D objects among the cells. All types of 4D fields (except for BLOBs and sub-tables) and variables (except for BLOBs) can be dropped into 4D View areas.
• In 4th Dimension, the “Draggable” property must have been selected for each object to be able to be dragged and dropped.
• In 4D View, the constant pv DD 4D objects (PV Drag drop allowed theme) must be passed to the PV SET AREA PROPERTY command.
The signature of 4D objects is __OBJECT4D__ (each __ consists of two underlines). This internal signature cannot be modified. Simply pass this signature to the PV SET DROP SIGNATURES command in order to allow “dropping” of 4D objects.

PV SET DRAG SIGNATURES (area; signatures)

Parameter	Type		Description
area	Longint	→	4D View area
signatures	String Array	→	Signatures array

Description

The PV SET DRAG SIGNATURES command sets the content of the signatures array as "drag" signatures for area.

Signatures are alphanumeric strings with free content. The maximum length for a signature is 32 characters.

These are are properties, defined using the PV SET AREA PROPERTY, which allows revealing 4D View area drag and drop-related options:
• To define drag and drop properties to apply to an area, use the PV Area properties constant theme.
• To define values for these different properties, use the PV Drag drop allowed and PV Drop mode constant themes.

Once drag and drop is authorized, it can interact with two areas (which can be the same) on the condition that the areas contain at least one common signature to drag for the source area and to drop for the target area.

As for the drag and drop event, it will be intercepted by the PV ON EVENT command.

Examples

The example below illustrates a drag and drop between two 4D View areas. Start by setting the signatures and behavior of areas, for example, upon changing a form:

```
ARRAY TEXT ($DDSignatureArray;1)
$DDSignatureArray{1}:="Signature_1"

PV SET AREA PROPERTY (SourceArea;pv drag trigger ;pv trigger on alt click ) `alt-click
                                                                              to drag
PV SET AREA PROPERTY (SourceArea;pv drag allowed ;pv DD multiple cells )
PV ON EVENT (SourceArea;pv on drag ;"DragDropMethod")
⇒ PV SET DRAG SIGNATURES (SourceArea;$DDSignatureArray)
```

```
PV SET AREA PROPERTY (TargetArea;pv drop allowed;pv DD single cell +
                                        pv DD adjacent cells +pv DD multiple cells )
PV SET AREA PROPERTY (TargetArea;pv drop mode ;pv drop replace only )
PV ON EVENT (TargetArea;pv on drop ;"DragDropMethod")
PV SET DROP SIGNATURES (TargetArea;$DDSignatureArray)  `Same signatures as drag
```

The project method *DragDropMethod* will be called when a drag is executed with alt-click or when there a drop occurs on a target area:

```
C_LONGINT($1)  `4D View reference area
C_LONGINT($2)  `Event
C_LONGINT($3)  `Keyboard code (modify)
C_LONGINT($4)  `Column number
C_LONGINT($5)  `Line number
C_LONGINT($6)  `ASCII code of the key

C_POINTER(SourceAreaPointer;TargetAreaPointer)  `Nowhere to keep them between
                                                        two callback methods
C_BLOB($blob)  `Temporary drag and drop notepad
C_LONGINT($currentColumn;$currentRow)  `Current cell coordinates
C_LONGINT($destinationColumn;$destinationRow)  `Coordinates of cell where drop
                                                                will occur

Case of
   : ($2=pv on drag )
      PV GET DRAG SOURCE ($1;SourceAreaPointer)  `Where do we come from?

   : ($2=pv on drop )
      PV GET DROP TARGET ($1;TargetAreaPointer)  `Where are we going?

      $blob:=PV Copy to blob (SourceAreaPointer->)  `Copy to notepad
      $destinationColumn:=PV Get drop info (TargetAreaPointer->;pv drop column )
         `Destination....
      $destinationRow:=PV Get drop info (TargetAreaPointer->;pv drop row )
                                                                `...coordinates
      PV GET CURRENT CELL (TargetAreaPointer->;$currentColumn;$currentRow)
         `Paste to assigned area
      PV GOTO CELL (TargetAreaPointer->;$destinationColumn;$destinationRow)
      PV PASTE FROM BLOB (TargetAreaPointer->;$blob;1;1;1;1)
         `Re-establish current cell once the operation is complete
      PV GOTO CELL (TargetAreaPointer->;$currentColumn;$currentRow)
End case
```

See Also

PV GET DRAG SIGNATURES, PV SET DROP SIGNATURES.

Constants

PV Area properties , PV Drag drop allowed and PV Drop mode themes.

PV GET DRAG SIGNATURES (area; signatures)

Parameter	Type		Description
area	Longint	→	4D View area
signatures	String Array	←	Signatures array

Description

The command PV GET DRAG SIGNATURES gets the area's drag signatures in the signatures array.

Signatures are alphanumeric strings whose content is free. The maximum length for a signature is 32 characters.

Example

Display a help message in cases where the area can be the object of an internal drag and drop.

```
ARRAY TEXT($DragSignatureArray;0)
ARRAY TEXT($DropSignatureArray;0)
C_TEXT(HelpMessage)
C_INTEGER($Index)

⇒ PV GET DRAG SIGNATURES (Area;$DragSignatureArray)
PV GET DROP SIGNATURES (Area;$DropSignatureArray)
HelpMessage:=""
For ($Index;1;Size of array($DragSignatureArray))  `Look for a common signature
   If (Find in array($DropSignatureArray;$DragSignatureArray{$Index})#-1)
      HelpMessage:="You can drag and drop inside this area."
      $Index:=Size of array($DragSignatureArray)
   End if
End for
```

See Also

PV GET DROP SIGNATURES, PV SET DRAG SIGNATURES.

PV SET DROP SIGNATURES

PV Drag and drop

version 6.8

PV SET DROP SIGNATURES (area; signatures)

Parameter	Type		Description
area	Longint	→	4D View area
signatures	String Array	→	Signatures array

Description

The command PV SET DROP SIGNATURES sets the content of the signatures array as "drop" signatures for area.

Signatures are alphanumeric strings whose content is free. The maximum length for a signature is 32 characters.

Example

Refer to the example for the PV SET DRAG SIGNATURES command.

See Also

PV GET DROP SIGNATURES, PV SET DRAG SIGNATURES.

PV GET DROP SIGNATURES

PV Drag and drop

version 6.8

PV GET DROP SIGNATURES (area; signatures)

Parameter	Type		Description
area	Longint	→	4D View area
signatures	String Array	←	Signatures array

Description

The command PV GET DROP SIGNATURES builds the array signatures from the area's drop signatures.

Signatures are alphanumeric strings whose content is free. The maximum length for a signature is 32 characters.

Example

Refer to the example for the PV GET DRAG SIGNATURES command.

See Also

PV GET DRAG SIGNATURES, PV SET DROP SIGNATURES.

PV Get drop info

version 6.8

PV Get drop info (area; option) → Longint

Parameter	Type		Description
area	Longint	→	4D View area
option	Longint	→	Option number
Function result	Longint	←	Option value

Description

The command PV Get drop info returns the drag and drop property value for the specified option.

The PV Drop info constants are used to define option:

• pv drag X offset
To use in the drag area. Returns the X coordinates of the cell (starting from the upper left corner of the cell) where the drag action has been done.

• pv drag Y offset
To use in the drag area. Returns the Y coordinates of the cell (starting from the upper left corner of the cell) where the drag action has been done.

• pv drop X offset
To use in the drop area. Returns the X coordinates of the cell (starting from the upper left corner of the cell) into which the drop action has been done.

• pv drop Y offset
To use in the drop area. Returns the Y coordinates of the cell (starting from the upper left corner of the cell) into which the drop action has been done.

• pv drop action
To use in the drop area. Allows getting the drop action done by the user. Returns a constant from the PV Drop action theme.

Example

Refer to the example for the PV SET DRAG SIGNATURES command.

See Also

PV SET DRAG SIGNATURES.

Constants

PV Drop info and PV Drop action themes.

PV GET DRAG SOURCE

PV Drag and drop

version 2003 (Modified)

PV GET DRAG SOURCE (area; source{; signatures})

Parameter	Type		Description
area	Longint	→	4D View area
source	Pointer	←	Pointer to drag source object
signatures	String Array	←	Signatures array

Description

The command PV GET DRAG SOURCE sets the pointer source to the drag source object.

The signatures array is filled with the signatures of objects being moved. This parameter can be
used to distinguish 4D objects from other 4D View objects that have been dragged and thus execute the appropriate code during dropping. The signature of 4D objects is __OBJECT4D__ (each __ consists of two underlines). This internal signature cannot be modified. For more information, refer to the Drag and Drop, Introduction section.

Example

Refer to the example for the PV SET DRAG SIGNATURES command.

See Also

PV GET DROP TARGET.

PV GET DROP TARGET

PV Drag and drop

version 6.8

PV GET DROP TARGET (area; target)

Parameter	Type		Description
area	Longint	→	4D View area
target	Pointer	←	Pointer to drop target object

Description

The command PV GET DROP TARGET sets the pointer target to the drop target object.

Example

Refer to the example for the PV SET DRAG SIGNATURES command.

See Also

PV GET DRAG SOURCE.

16

PV Plugin Property

PV Plugin Property, Introduction

version 6.8

The commands in this theme allow setting and getting the current value of generic 4D View plug-in properties.

These generic properties concern the number of rows and columns contained by default in new 4D View areas, the minimum size of included areas as well as the read/write location of 4D View templates.

PV SET PLUGIN PROPERTY

PV Plugin Property

version 6.8

PV SET PLUGIN PROPERTY (property; value)

Parameter	Type		Description
property	Longint	→	Property number
value	Longint	→	Property value

Description

The PV SET PLUGIN PROPERTY command allows setting of the value of the generic 4D View plug-in property.

This command can be placed, for example, in On Startup Database Method. The defined property is immediately applied to all new 4D View areas.

The property parameter is set using the PV Plugin properties theme constants.
Pass the value to be set for the property in the value parameter. Its content will depend on the defined property.
The following list details the constants that can be used in both the property and value parameters:

pv write template on server

In Client/Server applications, allows writing of 4D View document templates on each client machine. By default, templates are written on the server. Associated values: 0 or 1.
• 0: templates are written on each client machine.
• 1: templates are written on the server.

pv load template on server

In Client/Server applications, allows loading of 4D View document templates from each client machine. By default, templates are loaded from the server. Associated values: 0 or 1.
• 0 : templates are loaded from each client machine.
• 1 : templates are loaded from the server.

pv default columns count

Allows defining of default number of columns in new 4D View documents. This value can always be modified by the user or by programming. By default, new 4D View documents contain 256 columns. Associated values: number of columns.

pv default rows count

Allows defining of default number of rows in new 4D View documents. This value can always be modified by the user or by programming. By default, new 4D View documents contain 8192 rows. Associated values: number of rows.

pv button width

Allows defining of minimum width for areas included within 4D View. If less than this value, the area will be displayed as a button (the user simply clicks on the button to display the area as a full-size window). By default, 4D View areas are displayed as buttons if their width is less than 150 pixels. Associated values: width (in pixels).

pv button height

Allows defining of minimum height for areas included within 4D View. If less than this value, the area will be displayed as a button (the user simply clicks on the button to display the area as a full-size window). By default, 4D View areas are displayed as buttons if their height is less than 100 pixels. Associated values: height (in pixels).

pv confirm convert dialog

Allows displaying or removing of a conversion message when a 4D Calc 6.7 document is opened by 4D View. The displayed message is stored in 4D View resources. Associated values: 0 or 1.
• 0: the confirm message is not displayed.
• 1: the confirm message is displayed.

Example

We would like for all 4D View areas created in the base to be composed initially of 100 columns and 50 rows:

⇒ ***PV SET PLUGIN PROPERTY***(pv default columns count ;100)
⇒ ***PV SET PLUGIN PROPERTY***(pv default rows count ;50)

See also

PV Get plugin property.

Constants

PV Plugin properties theme.

PV Get plugin property

PV Plugin Property

version 6.8

PV Get plugin property (property) → Longint

Parameter	Type		Description
property	Longint	→	Property number
Function result	Longint	←	Property value

Description

The PV Get plugin property command returns the current value of the generic 4D View plug-in property.

The property parameter is set using the PV Plugin properties constant theme. For more information on these constants, refer to the PV SET PLUGIN PROPERTY command description.

Example

We want to know the width (in pixels) above which the 4D View included areas change into buttons:

```
     C_LONGINT($vWidth)
⇒    $vWidth:=PV Get plugin property(pv button width )
     ALERT("The minimum width for 4D View areas is "+String($vWidth)+" pixels.")
```

See also

PV SET PLUGIN PROPERTY.

Constants

PV Plugin properties theme.

17

PV Tools

PV Tools, Introduction

PV Tools

version 6.8

Commands and functions of this theme provide various tools for managing different ways of color referencing as well as getting and setting the title of external windows.

PV RGB to color

PV RGB to color (red; green; blue) → Longint

Parameter	Type		Description
red	Integer	→	Red component (0 to 255)
green	Integer	→	Green component (0 to 255)
blue	Integer	→	Blue component (0 to 255)
Function result	Longint	←	Color

Description

The PV RGB to color command returns a long integer defining the RGB color, which results in a color from the red, green, and blue component.

Refer to 4th Dimension command SET RGB COLORS for detailed information on the color system used by 4D.

Example

Refer to the example for the PV Color to index command.

See Also

PV COLOR TO RGB.

PV COLOR TO RGB

PV COLOR TO RGB (color; red; green; blue)

Parameter	Type		Description
color	Longint	→	Color
red	Integer	←	Red component (0 to 255)
green	Integer	←	Green component (0 to 255)
blue	Integer	←	Blue component (0 to 255)

Description

The command PV COLOR TO RGB returns, in the red, green and blue parameters, the three RGB components of color.

Refer to the description of the 4D command SET RGB COLORS for detailed information on the color system used by 4D.

Example

Display the three RGB components of the background color of cell A1:

```
   C_LONGINT($Color)
   C_INTEGER($Red;$Green;$Blue)

   PV SET CELL STRING VALUE (Area;2;1;"Color") `Labels
   PV SET CELL STRING VALUE  (Area;2;2;"Red")
   PV SET CELL STRING VALUE  (Area;2;3;"Green")
   PV SET CELL STRING VALUE  (Area;2;4;"Blue")

   $Color:=PV Get cell property (Area;1;1;pv style color back odd )
⇒  PV COLOR TO RGB ($Color;$Red;$Green;$Blue)

   PV SET CELL NUM VALUE (Area;1;2;$Red) `Values
   PV SET CELL NUM VALUE (Area;1;3;$Green)
   PV SET CELL NUM VALUE (Area;1;4;$Blue)
```

See Also

PV RGB to color.

PV Color to index

PV Color to index (color) → Integer

Parameter	Type		Description
color	Longint	→	Color number
Function result	Integer	←	Indexed color number

Description

The PV Color to index command returns the number of the specified RGB color in the default 4D color palette. 4D's indexed colors range from 0 to 255.

Refer to the descriptions of the following 4D commands for detailed information on the RGB colors used by 4D:
- SET RGB COLORS for the RGB color system used by 4D.
- SET COLOR for the 4D color palette.

Example

This method sets in cell A1 the background color set by the RGB values (0 to 255) entered in cells A2, A3, and A4. The C1 cell displays the number of the index color closest in the 4D palette — with the ad hoc background color — while cells C2, C3, and C4 display the RGB values corresponding to this indexed color, which then illustrates the difference between the starting values.

```
C_LONGINT($Color) `Background color for A1 (RGB) then color after indexing
C_INTEGER($Red;$Green;$Blue) `RGB colors at the start and when finished
C_INTEGER($Index) `Number in the 4D palette

PV SET CELL STRING VALUE (Area;2;1;"Color") `Labels
PV SET CELL STRING VALUE (Area;2;2;"Red")
PV SET CELL STRING VALUE (Area;2;3;"Green")
PV SET CELL STRING VALUE (Area;2;4;"Blue")

$Red:=PV Get cell num value (Area;1;2) `Starting RGB colors
$Green:=PV Get cell num value (Area;1;3)
$Blue:=PV Get cell num value (Area;1;4)
```

```
$Color:=PV RGB to color ($Red;$Green;$Blue)
PV SET CELL PROPERTY (Area;1;1;pv style color back odd ;$Color)
   `Assign A1 background

⇒  $Index:=PV Color to index ($Color) `"Indexing"
   PV SET CELL NUM VALUE (Area;3;1;$Index) `Number in the 4D palette
   $Color:=PV Index to color ($Index) `New color
   PV SET CELL PROPERTY (Area;3;1;pv style color back odd ;$Color)
      `Assign C1 background

   PV COLOR TO RGB ($Color;$Red;$Green;$Blue) `Decompose
   PV SET CELL NUM VALUE (Area;3;2;$Red) `RGB colors after "indexing"
   PV SET CELL NUM VALUE (Area;3;3;$Green)
   PV SET CELL NUM VALUE (Area;3;4;$Blue)
```

See Also

PV Index to color.

PV Index to color

PV Index to color (index) → Longint

Parameter	Type		Description
index	Integer	→	Indexed color number
Function result	Longint	←	Color number

Description

The command PV Index to color returns the corresponding RGB color number, in the 4D palette, to the number index.

The three RGB components can later be extracted from this result using the PV COLOR TO RGB command. 4D's indexed colors range from 0 to 255.

Refer to the descriptions of the following 4D commands for detailed information on the RGB colors used by 4D:
- SET RGB COLORS for the RGB color system used by 4D.
- SET COLOR for the 4D color palette.

Example

Refer to the examples for the PV SET RANGE BORDER and PV Color to index commands.

See Also

PV Color to index.

PV SET WINDOW TITLE

PV SET WINDOW TITLE (area; title)

Parameter	Type		Description
area	Longint	→	4D View area
title	String	→	New title of the external window

Description

The PV SET WINDOW TITLE command assigns the title of the window of the 4D View external area.

Example

Add the current date to the window.

```
C_TEXT($Title)  `Existing title
$Title:=PV Get window title (Area)

⇒  PV SET WINDOW TITLE (Area;$Title+" ("+String(Current date)+")")
```

See also

PV Get window title.

PV Get window title

PV Get window title (area) → String

Parameter	Type		Description
area	Longint	→	4D View area
Function result	String	←	External window title

Description

The PV Get window title command returns the title of the title of the window of the 4D View external area.

Example

Refer to the example for the PV SET WINDOW TITLE command.

See also

PV SET WINDOW TITLE.

18

PV Allowed Input

PV Allowed Input, Introduction

version 6.8

The commands of this theme enable you to specify and read the 4D objects (variables, methods and commands) to which 4D View users will have access in the formulas of the current area. This operation allows the control of user actions in 4D View areas.

By default, the allowed input system is not activated (users have access to all 4D variables, methods and commands). Before using a command of this theme, you must first forbid all calls to these 4D objects by executing the PV SET DOCUMENT PROPERTY command with the pv no formula external call constant set to 1 (pv value on):

- to forbid calls and activate the allowed input system:
  PV SET DOCUMENT PROPERTY(area;pv no formula external call;pv value on)
- to deactivate the system (default behavior):
  PV SET DOCUMENT PROPERTY(area;pv no formula external call;pv value off).

PV SET ALLOWED VAR LIST

version 6.8

PV SET ALLOWED VAR LIST (area; arrayVar)

Parameter	Type		Description
area	Longint	→	4D View area
arrayVar	String array	→	Variable names array

Description

The PV SET ALLOWED VAR LIST command assigns arrayVar with the list of allowed variables (process and interprocess variables only) in area formulas.

Note : For this command to have an effect, the allowed input system must be activated. See the section PV Allowed Input, Introduction.

See Also

PV GET ALLOWED VAR LIST.

PV GET ALLOWED VAR LIST

PV Allowed Input

version 6.8

PV GET ALLOWED VAR LIST (area; arrayVar)

Parameter	Type		Description
area	Longint	→	4D View area
arrayVar	String array	←	Array of variable names

Description

The command PV GET ALLOWED VAR LIST fills arrayVar with the list of allowed variables (process and interprocess variables only) in formulas.

See Also

PV SET ALLOWED VAR LIST.

PV SET ALLOWED MET LIST

version 6.8

PV SET ALLOWED MET LIST (area; arrayMet)

Parameter	Type		Description
area	Longint	→	4D View area
arrayMet	String array	→	Array of method names

Description

The PV SET ALLOWED MET LIST command assigns arrayMet with the list of allowed methods in area formulas.

Note : For this command to have an effect, the allowed input system must be activated. See the section PV Allowed Input, Introduction.

See Also

PV GET ALLOWED MET LIST.

PV GET ALLOWED MET LIST

PV Allowed Input

version 6.8

PV GET ALLOWED MET LIST (area; arrayMet)

Parameter	Type		Description
area	Longint	→	4D View area
arrayMet	String array	←	Array of method names

Description

The command PV GET ALLOWED MET LIST fills arrayMet with the list of allowed methods in formulas.

See Also

PV SET ALLOWED MET LIST.

PV SET ALLOWED COM LIST

PV Allowed Input

version 6.8

PV SET ALLOWED COM LIST (area; arrayCom)

Parameter	Type		Description
area	Longint	→	4D View area
arrayCom	String array	→	4D commands names array

Description

The PV SET ALLOWED COM LIST command assigns arrayCom with the list of allowed 4D commands in area formulas.

Note : For this command to have an effect, the allowed input system must be activated. See the section PV Allowed Input, Introduction.

See Also

PV GET ALLOWED COM LIST.

PV GET ALLOWED COM LIST

PV Allowed Input

version 6.8

PV GET ALLOWED COM LIST (area; arrayCom)

Parameter	Type		Description
area	Longint	→	4D View area
arrayCom	String array	←	4D commands names array

Description

The command PV GET ALLOWED COM LIST fills arrayCom with the list of allowed 4D commands in formulas.

See Also

PV SET ALLOWED COM LIST.

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Appendixes

This list proivides error codes returned by 4D View in your error management methods. These codes are used by the PV GET LAST ERROR and PV ON ERROR commands.

No.	Error message
1	Unknown error
2	Invalid command
3	Obsolete command
4	Obsolete parameter
5	Parameter is out of range
6	Invalid array name
7	Invalid array type
8	Numeric array expected
9	Text array expected
10	Invalid array count
11	Array counts are not the same
12	Invalid variable type
13	Empty picture
14	External area expected
15	4D View plug-in area expected
16	4D Calc plug-in area expected
17	ALP plug-in area expected
18	Out of memory
19	Error while reading or writing document
20	Not a 4D View document
21	Not a 4D Calc document
22	Not a SYLK document
23	Invalid document format
24	Document version is too recent
25	Document seems to be damaged
26	Document already exists
27	Document does not exist
28	Invalid property
29	This property is “read-only”
30	Select mode value is invalid
31	Select action value is invalid
32	Carriage return value is invalid
33	Arrow keys value is invalid
34	Enter key value is invalid
35	Sort value is invalid
36	Invalid border edge value
37	Invalid border style value
38	Invalid style target
39	Invalid direction

40	Invalid alignment
41	Invalid rotation
42	Obsolete border style
43	Invalid header type
44	Invalid date & time format
45	Invalid picture format
46	Invalid color
47	Invalid style value
48	Invalid drag&drop behavior
49	Invalid style sheet reference
50	Invalid format reference
52	Invalid font reference
53	Invalid picture number
54	Invalid selected range number
55	Invalid vertical splitter number
56	Invalid horizontal splitter number
57	Last pane cannot be removed
58	Invalid pane width
59	Invalid pane height
60	Invalid column number
61	Invalid row number
62	Cell is linked
63	Invalid cell range
64	Invalid number of columns/rows to insert
65	Invalid number of columns/rows to delete
66	Invalid formula
67	Invalid column width
68	Invalid row height
69	Invalid cell name
70	Name already used
71	No linked column
72	Linked columns do not have the same row count
73	Linked fields do not have the same master table
74	Invalid calculated value type
75	Invalid table or field
76	Invalid table
77	Invalid field
78	Invalid field type
79	No current selection
80	No current record
81	No valued cells to print
82	Invalid statistics
83	Invalid condition
84	Invalid table

85 Stylesheet already exists
86 Invalid operation in a linked area.

See also

PV GET LAST ERROR, PV ON ERROR.

Constants

PV Area properties

Related command(s): PV Get area property, PV SET AREA PROPERTY.

Constant	Type	Value
pv allow undo redo	Long Integer	39
pv arrow keys	Long Integer	9
pv carriage return	Long Integer	8
pv column headers height	Long Integer	21
pv copy hidden	Long Integer	19
pv current cell highlight	Long Integer	3
pv drag allowed	Long Integer	13
pv drag trigger	Long Integer	12
pv drop allowed	Long Integer	33
pv drop mode	Long Integer	14
pv field tag	Long Integer	17
pv field wrapper	Long Integer	18
pv headers sort	Long Integer	20
pv hor pane count	Long Integer	11
pv input enter key mode	Long Integer	15
pv input trigger	Long Integer	6
pv record tag	Long Integer	16
pv resizable columns	Long Integer	4
pv resizable rows	Long Integer	5
pv row headers width	Long Integer	22
pv saving dialog	Long Integer	37
pv select highlight	Long Integer	1
pv select mode	Long Integer	0
pv select null	Long Integer	2
pv select trigger	Long Integer	7
pv show borders toolbar	Long Integer	29
pv show column headers	Long Integer	23
pv show formula toolbar	Long Integer	30
pv show hor grid	Long Integer	31
pv show hor scrollbar	Long Integer	34
pv show menu bar	Long Integer	25
pv show numbers toolbar	Long Integer	27
pv show row headers	Long Integer	24
pv show selection	Long Integer	40
pv show standard toolbar	Long Integer	26
pv show style toolbar	Long Integer	28

PV Area properties (continued)

Constant	Type	Value
pv show vert grid	Long Integer	32
pv show vert scrollbar	Long Integer	35
pv vert pane count	Long Integer	10
pv zoom factor	Long Integer	36

PV Arrow keys

These constants are the possible values for the 'pv arrows' area property.

Related command(s): PV Get area property, PV SET AREA PROPERTY.

Constant	Type	Value
pv arrow keys allowed	Long Integer	0
pv arrow keys not allowed	Long Integer	3
pv right and left arrow keys	Long Integer	2
pv top and bottom arrow keys	Long Integer	1

PV Border edge

The constants in this theme allow setting a border for a range of cells. Several constants can be added to define more than one border.
Once several cells have been selected, the first four constants indicate the outside edges of the range. In this case, the inside edges of the range can be set using the "pv border edge inner hor" and "pv border edge inner vert" constants.

Related command(s): PV GET BORDER STYLE, PV SET BORDER STYLE.

Constant	Type	Value
pv border edge bottom	Long Integer	8
pv border edge inner hor	Long Integer	16
pv border edge inner vert	Long Integer	32
pv border edge left	Long Integer	1
pv border edge right	Long Integer	4
pv border edge top	Long Integer	2

PV Border style

Related command(s): PV GET BORDER STYLE, PV SET BORDER STYLE.

Constant	Type	Value
pv border style 1	Long Integer	1
pv border style 111	Long Integer	7
pv border style 112	Long Integer	9
pv border style 2	Long Integer	2
pv border style 211	Long Integer	8
pv border style 212	Long Integer	10
pv border style 222	Long Integer	11
pv border style 232	Long Integer	12
pv border style 3	Long Integer	3
pv border style 4	Long Integer	4
pv border style 5	Long Integer	5
pv border style 6	Long Integer	6
pv border style half	Long Integer	14
pv border style none	Long Integer	0
pv border style quarter	Long Integer	13

PV Carriage return

The constants in this theme allow defining the validation action of the Carriage return key during entry.
Once it is "authorized", the Carriage return key validates the entry, regardless or not if it is associated to a modification keystroke (according to your parameters).

Related command(s): PV Get area property, PV SET AREA PROPERTY.

Constant	Type	Value
pv cr allowed	Long Integer	1
pv cr allowed with ctrl	Long Integer	2
pv cr allowed with shift	Long Integer	4
pv cr not allowed	Long Integer	0

PV Cell properties

Related command(s): PV Get cell property, PV Get range property, PV SET CELL NAME, PV SET CELL PROPERTY, PV SET RANGE PROPERTY.

Constant	Type	Value
pv add name	Long Integer	0
pv cell height	Long Integer	101
pv cell width	Long Integer	100
pv replace name	Long Integer	1

PV Cell value type

Related command(s): PV Get cell value type.

Constant	Type	Value
pv value type boolean	Long Integer	6
pv value type date	Long Integer	4
pv value type date time	Long Integer	5
pv value type none	Long Integer	0
pv value type numeric	Long Integer	1
pv value type picture	Long Integer	7
pv value type string	Long Integer	2
pv value type time	Long Integer	3

PV Commands

The constants of this theme allow making one of the 4D View functions accessible in the User environment. They are prefixed in the following manner:
• "cmd" indicates a menu command (as well as the corresponding icon in the tool palette).
• "pal" indicates a function that is only accessible using a tool palette icon. These constants can only be used with the PV SET COMMAND STATUS and PV GET COMMAND STATUS commands.

Related command(s): PV EXECUTE COMMAND, PV GET COMMAND STATUS, PV Get on command method, PV ON COMMAND, PV SET COMMAND STATUS.

Constant	Type	Value
pv cmd calculate now	Long Integer	120
pv cmd calculation mode	Long Integer	119
pv cmd db import fields	Long Integer	213
pv cmd db import report	Long Integer	214
pv cmd db linked cells	Long Integer	215
pv cmd db linked pictures	Long Integer	217
pv cmd document information	Long Integer	109
pv cmd edit clear all	Long Integer	234
pv cmd edit clear borders	Long Integer	233
pv cmd edit clear formats	Long Integer	232
pv cmd edit clear formulas	Long Integer	230
pv cmd edit clear other	Long Integer	235
pv cmd edit clear values	Long Integer	231
pv cmd edit copy	Long Integer	4
pv cmd edit cut	Long Integer	3
pv cmd edit delete	Long Integer	136
pv cmd edit fill down	Long Integer	134
pv cmd edit fill right	Long Integer	135
pv cmd edit find	Long Integer	125
pv cmd edit find next	Long Integer	126
pv cmd edit go to	Long Integer	129
pv cmd edit go to last cell	Long Integer	130
pv cmd edit move	Long Integer	124
pv cmd edit paste	Long Integer	5
pv cmd edit redo	Long Integer	2
pv cmd edit repeat	Long Integer	122
pv cmd edit replace	Long Integer	127
pv cmd edit replace next	Long Integer	128
pv cmd edit select all	Long Integer	7

PV Commands (continued)

Constant	Type	Value
pv cmd edit set name	Long Integer	170
pv cmd edit sort	Long Integer	131
pv cmd edit special paste	Long Integer	123
pv cmd edit undo	Long Integer	1
pv cmd export	Long Integer	105
pv cmd export area clear	Long Integer	107
pv cmd export area set	Long Integer	106
pv cmd export area show	Long Integer	108
pv cmd file new	Long Integer	100
pv cmd file open	Long Integer	101
pv cmd file page setup	Long Integer	110
pv cmd file preferences	Long Integer	118
pv cmd file print document	Long Integer	114
pv cmd file print formulas	Long Integer	113
pv cmd file print preview	Long Integer	112
pv cmd file printing options	Long Integer	111
pv cmd file save	Long Integer	102
pv cmd file save as	Long Integer	103
pv cmd file save template	Long Integer	104
pv cmd format borders	Long Integer	202
pv cmd format cells	Long Integer	187
pv cmd format col default W	Long Integer	175
pv cmd format column auto width	Long Integer	174
pv cmd format column hide	Long Integer	179
pv cmd format column show	Long Integer	180
pv cmd format column width	Long Integer	173
pv cmd format row auto height	Long Integer	177
pv cmd format row default H	Long Integer	178
pv cmd format row height	Long Integer	176
pv cmd format row hide	Long Integer	181
pv cmd format row show	Long Integer	182
pv cmd format style sheets	Long Integer	188
pv cmd freeze references	Long Integer	121
pv cmd insert cell	Long Integer	154
pv cmd insert column	Long Integer	155
pv cmd insert column break	Long Integer	211
pv cmd insert row	Long Integer	156
pv cmd insert row break	Long Integer	212
pv cmd linked columns arrays	Long Integer	219

PV Commands (continued)

Constant	Type	Value
pv cmd linked columns fields	Long Integer	218
pv cmd print area clear	Long Integer	116
pv cmd print area set	Long Integer	115
pv cmd print area show	Long Integer	117
pv cmd security hide	Long Integer	183
pv cmd security lock	Long Integer	185
pv cmd security show	Long Integer	184
pv cmd security unlock	Long Integer	186
pv cmd swap screenmode	Long Integer	20
pv cmd view col headers	Long Integer	142
pv cmd view formula	Long Integer	141
pv cmd view grid	Long Integer	144
pv cmd view Hscrollbar	Long Integer	146
pv cmd view menu bar	Long Integer	140
pv cmd view page breaks	Long Integer	147
pv cmd view pictures	Long Integer	149
pv cmd view references	Long Integer	148
pv cmd view row headers	Long Integer	143
pv cmd view toolbar border	Long Integer	153
pv cmd view toolbar number	Long Integer	151
pv cmd view toolbar standard	Long Integer	150
pv cmd view toolbar style	Long Integer	152
pv cmd view Vscrollbar	Long Integer	145
pv pal border all	Long Integer	207
pv pal border bottom	Long Integer	203
pv pal border color	Long Integer	210
pv pal border columns	Long Integer	205
pv pal border frame	Long Integer	204
pv pal border kind	Long Integer	209
pv pal border none	Long Integer	208
pv pal border rows	Long Integer	206
pv pal format string	Long Integer	160
pv pal formula cancel	Long Integer	221
pv pal formula validate	Long Integer	222
pv pal number align auto	Long Integer	189
pv pal number align center	Long Integer	191
pv pal number align left	Long Integer	190
pv pal number align right	Long Integer	192
pv pal number money	Long Integer	201

PV Commands (continued)

Constant	Type	Value
pv pal number percentage	Long Integer	200
pv pal number scientific	Long Integer	199
pv pal standard sort asc	Long Integer	132
pv pal standard sort desc	Long Integer	133
pv pal standard zoom	Long Integer	139
pv pal style bold	Long Integer	196
pv pal style font name	Long Integer	193
pv pal style font size	Long Integer	194
pv pal style italic	Long Integer	197
pv pal style style sheet	Long Integer	195
pv pal style underline	Long Integer	198

PV Control

Related command(s): PV GET CELL CONTROL, PV SET CELL CONTROL.

Constant	Type	Value
pv control check box	Long Integer	3
pv control combo box	Long Integer	5
pv control drop down	Long Integer	4
pv control none	Long Integer	0
pv control push button	Long Integer	1
pv control radio button	Long Integer	2

PV Directions

Related command(s): PV GET NEXT FREE CELL, PV GOTO NEXT CELL.

Constant	Type	Value
pv to the bottom	Long Integer	1
pv to the left	Long Integer	2
pv to the right	Long Integer	0
pv to the top	Long Integer	3

PV Document format

Related command(s): PV SAVE DOCUMENT.

Constant	Type	Value
pv html	Long Integer	3
pv sylk	Long Integer	2
pv tab tab return	Long Integer	1
pv view	Long Integer	0

PV Document properties

Related command(s): PV Get document property, PV SET DOCUMENT PROPERTY.

Constant	Type	Value
pv column count	Long Integer	0
pv document modified	Long Integer	4
pv no external call	Long Integer	3
pv picture count	Long Integer	2
pv row count	Long Integer	1

PV Drag drop allowed

The constants of this theme allow indicating or getting the type of source and target elements accepted by a 4D View area for drap and drops. These constants can be added in order to authorize several types of elements.
An example of usage is provided in the description for the PV SET DRAG SIGNATURES command.

Related command(s): PV Get area property, PV SET AREA PROPERTY.

Constant	Type	Value
pv DD 4D objects	Long Integer	1024
pv DD adjacent cells	Long Integer	4
pv DD adjacent columns	Long Integer	256
pv DD adjacent rows	Long Integer	32
pv DD multiple cells	Long Integer	8
pv DD multiple columns	Long Integer	512
pv DD multiple rows	Long Integer	64
pv DD not allowed	Long Integer	0
pv DD single cell	Long Integer	2
pv DD single column	Long Integer	128
pv DD single row	Long Integer	16

PV Drop action

Related command(s): PV Get drop info.

Constant	Type	Value
pv entire area	Long Integer	1
pv insert cell down	Long Integer	2
pv insert cell right	Long Integer	3
pv insert column	Long Integer	7
pv insert row	Long Integer	5
pv replace cell	Long Integer	4
pv replace column	Long Integer	8
pv replace row	Long Integer	6

PV Drop info

Related command(s): PV Get drop info.

Constant	Type	Value
pv drag column	Long Integer	2
pv drag content	Long Integer	6
pv drag plugin	Long Integer	1
pv drag process	Long Integer	0
pv drag row	Long Integer	3
pv drag X offset	Long Integer	4
pv drag Y offset	Long Integer	5
pv drop action	Long Integer	14
pv drop column	Long Integer	9
pv drop content	Long Integer	13
pv drop plugin	Long Integer	8
pv drop process	Long Integer	7
pv drop row	Long Integer	10
pv drop X offset	Long Integer	11
pv drop Y offset	Long Integer	12

PV Drop mode

Related command(s): PV Get area property, PV SET AREA PROPERTY.

Constant	Type	Value
pv drop insert only	Long Integer	1
pv drop insert or replace	Long Integer	0
pv drop replace only	Long Integer	2

PV Event

Specific details:
• 'pv on cell value changed' is not generated for dynamic areas.
• 'pv on getting focus' and 'pv on losing focus' are generated when the 4D View area (and not the cell) gets or loses the focus.

Related command(s): PV Get on event method, PV ON EVENT.

Constant	Type	Value
pv on active cell changed	Long Integer	8
pv on cell value changed	Long Integer	9
pv on clicked	Long Integer	2
pv on column resize	Long Integer	12
pv on column sort	Long Integer	14
pv on contextual click	Long Integer	15
pv on double clicked	Long Integer	4
pv on drag	Long Integer	10
pv on drop	Long Integer	11
pv on getting focus	Long Integer	0
pv on keyboard	Long Integer	6
pv on losing focus	Long Integer	1
pv on right clicked	Long Integer	3
pv on row resize	Long Integer	13
pv on scrolled	Long Integer	5
pv on selection changed	Long Integer	7

PV Header sort

Related command(s): PV Get area property, PV SET AREA PROPERTY, PV SORT COLUMN.

Constant	Type	Value
pv ascending sort	Long Integer	2
pv descending sort	Long Integer	3
pv sort allowed	Long Integer	1
pv sort not allowed	Long Integer	0

PV Headers & footers

Related command(s): PV Get header, PV SET HEADER.

Constant	Type	Value
pv footer center	Long Integer	5
pv footer left	Long Integer	4
pv footer right	Long Integer	6
pv header center	Long Integer	2
pv header left	Long Integer	1
pv header right	Long Integer	3

PV Input enter key mode

The constants in this theme allow defining the action of the Enter key during entry.
When used in "standard" mode, the Enter key only validates the entry. It can also activate the cell located to the right ("pv enter key as tab") or above ("pv enter key as return") of the modified cell.

Related command(s): PV Get area property, PV SET AREA PROPERTY.

Constant	Type	Value
pv enter key as return	Long Integer	2
pv enter key as tab	Long Integer	1
pv enter key standard	Long Integer	0

PV Pane properties

The "pv pane relative scroll" constant can only be used with write commands (PV SET PANE PROPERTY...).

Related command(s): PV Get hor pane property, PV Get vert pane property, PV SET HOR PANE PROPERTY, PV SET VERT PANE PROPERTY.

Constant	Type	Value
pv pane columns count	Long Integer	5
pv pane first column	Long Integer	4
pv pane first row	Long Integer	4
pv pane lock scrollbar	Long Integer	0
pv pane lock splitter	Long Integer	1
pv pane relative scroll	Long Integer	7
pv pane rows count	Long Integer	5
pv pane size in pixels	Long Integer	3
pv pane true scroll	Long Integer	6
pv pane view splitter cursor	Long Integer	2

PV Picture mapping mode

Related command(s): PV Get picture property, PV SET PICTURE PROPERTY.

Constant	Type	Value
pv mapping replicated	Long Integer	3
pv mapping scaled centered prop	Long Integer	6
pv mapping scaled to fit	Long Integer	5
pv mapping scaled to fit prop	Long Integer	4
pv mapping trunc non-centered	Long Integer	1
pv mapping truncated centered	Long Integer	2

PV Picture properties

The pv picture data width and pv picture data height constants are only available as read-only.

Related command(s): PV Get picture property, PV SET PICTURE PROPERTY.

Constant	Type	Value
pv picture background	Long Integer	8
pv picture column	Long Integer	0
pv picture data height	Long Integer	5
pv picture data width	Long Integer	4
pv picture display height	Long Integer	7
pv picture display width	Long Integer	6
pv picture fixed size	Long Integer	10
pv picture horz offset	Long Integer	2
pv picture locked	Long Integer	11
pv picture mapping mode	Long Integer	9
pv picture row	Long Integer	1
pv picture vert offset	Long Integer	3

PV Plugin properties

Related command(s): PV Get plugin property, PV SET PLUGIN PROPERTY.

Constant	Type	Value
pv button height	Long Integer	5
pv button width	Long Integer	4
pv confirm convert dialog	Long Integer	6
pv default columns count	Long Integer	2
pv default rows count	Long Integer	3
pv load template on server	Long Integer	1
pv write template on server	Long Integer	0

PV Print properties

Related command(s): PV Get print property, PV SET PRINT PROPERTY.

Constant	Type	Value
pv print adjust area	Long Integer	10
pv print binding	Long Integer	26
pv print bottom margin	Long Integer	3
pv print centered	Long Integer	9
pv print color	Long Integer	23
pv print dead bottom margin	Long Integer	18
pv print dead left margin	Long Integer	15
pv print dead right margin	Long Integer	17
pv print dead top margin	Long Integer	16
pv print destination	Long Integer	24
pv print document name	Long Integer	27
pv print double sided	Long Integer	25
pv print frame each page	Long Integer	11
pv print grid	Long Integer	12
pv print headers	Long Integer	8
pv print left margin	Long Integer	0
pv print number copies	Long Integer	21
pv print orientation	Long Integer	19
pv print pages from	Long Integer	28
pv print pages to	Long Integer	29
pv print paper height	Long Integer	14
pv print paper source	Long Integer	22
pv print paper width	Long Integer	13
pv print repeat first column	Long Integer	4
pv print repeat first row	Long Integer	6
pv print repeat last column	Long Integer	5
pv print repeat last row	Long Integer	7
pv print right margin	Long Integer	2
pv print scale	Long Integer	20
pv print top margin	Long Integer	1

PV Print values

Related command(s): PV Get print property, PV SET PRINT PROPERTY.

Constant	Type	Value
pv black and white	Long Integer	2
pv color	Long Integer	3
pv destination EPS file	Long Integer	7
pv destination file	Long Integer	5
pv destination PDF file	Long Integer	6
pv destination printer	Long Integer	4
pv landscape orientation	Long Integer	1
pv left binding	Long Integer	8
pv portrait orientation	Long Integer	0
pv top binding	Long Integer	9

PV Report functions

Related command(s): PV REPORT MANY, PV REPORT ONE.

Constant	Type	Value
pv report function average	Long Integer	1
pv report function count	Long Integer	4
pv report function max	Long Integer	3
pv report function min	Long Integer	2
pv report function none	Long Integer	-1
pv report function sum	Long Integer	0

PV Select mode

Related command(s): PV Get area property, PV SET AREA PROPERTY.

Constant	Type	Value
pv select adjacent cells	Long Integer	8
pv select adjacent columns	Long Integer	5
pv select adjacent rows	Long Integer	2
pv select multiple cells	Long Integer	9
pv select multiple columns	Long Integer	6
pv select multiple rows	Long Integer	3
pv select not allowed	Long Integer	0
pv select single cell	Long Integer	7
pv select single column	Long Integer	4
pv select single row	Long Integer	1

PV Selection action

The constants in this theme allow specifying the action to execute when a selection command has been used, if a selection of cells already exists:
• "pv selection set": the new selection replaces the existing selection.
• "pv selection add": the new selection is added to the existing selection.

Related command(s): PV SELECT ALL, PV SELECT CELL, PV SELECT COLUMNS, PV SELECT RANGE, PV SELECT RANGES LIST, PV SELECT ROWS.

Constant	Type	Value
pv selection add	Long Integer	1
pv selection set	Long Integer	0

PV Style format date time

Related command(s): PV Get cell property, PV Get range property, PV Get style property, PV SET CELL PROPERTY, PV SET RANGE PROPERTY, PV SET STYLE PROPERTY.

Constant	Type	Value
pv Abbr Month Day Year	Long Integer	6
pv Abbreviated	Long Integer	2
pv Abbreviated H MM AM PM	Long Integer	13
pv Day Name	Long Integer	7
pv Day Number	Long Integer	8
pv HH MM	Long Integer	18
pv HH MM AM PM	Long Integer	21
pv HH MM SS	Long Integer	17
pv Hour Min	Long Integer	20
pv Hour Min Sec	Long Integer	19
pv Long	Long Integer	3
pv Long H MM AM PM	Long Integer	12
pv Month Day Year	Long Integer	5
pv Month Day Year H MM AM PM	Long Integer	15
pv Month Name	Long Integer	9
pv Month Number	Long Integer	10
pv Short	Long Integer	1
pv Short HH MM SS	Long Integer	14
pv Short2	Long Integer	4
pv Short2 Hour Min Sec	Long Integer	16
pv Year Number	Long Integer	11

PV Style properties

Related command(s): PV Get cell property, PV Get range property, PV Get style property, PV SET CELL PROPERTY, PV SET RANGE PROPERTY, PV SET STYLE PROPERTY.

Constant	Type	Value
pv style automatic word wrap	Long Integer	33
pv style based on	Long Integer	4
pv style color back even	Long Integer	11
pv style color back odd	Long Integer	12
pv style color minus even	Long Integer	17
pv style color minus odd	Long Integer	18
pv style color text even	Long Integer	13
pv style color text odd	Long Integer	14
pv style color zero even	Long Integer	15
pv style color zero odd	Long Integer	16
pv style format alpha	Long Integer	6
pv style format bool	Long Integer	8
pv style format date time	Long Integer	9
pv style format forced text	Long Integer	32
pv style format num	Long Integer	7
pv style format picture	Long Integer	10
pv style hidden	Long Integer	1
pv style hor alignment	Long Integer	29
pv style locked	Long Integer	0
pv style rotation	Long Integer	31
pv style spellcheck	Long Integer	2
pv style text bold	Long Integer	22
pv style text condensed	Long Integer	27
pv style text extended	Long Integer	28
pv style text face	Long Integer	21
pv style text font	Long Integer	19
pv style text italic	Long Integer	23
pv style text outline	Long Integer	25
pv style text shadow	Long Integer	26
pv style text size	Long Integer	20
pv style text underline	Long Integer	24
pv style use picture height	Long Integer	3
pv style vert alignment	Long Integer	30

PV Style special values

These constants allow applying the PV SET STYLE PROPERTY and PV Get style property commands to standard 4D View stylesheets ('style' parameter).

Related command(s): PV Get style property, PV SET STYLE PROPERTY.

Constant	Type	Value
pv style cells	Long Integer	-1
pv style col row headers	Long Integer	-2
pv style page footer header	Long Integer	-3

PV Style values

Constants suffixed as "mixed" can only be used with property reading commands.

Related command(s): PV Get cell property, PV Get range property, PV Get style property, PV SET CELL PROPERTY, PV SET RANGE PROPERTY, PV SET STYLE PROPERTY.

Constant	Type	Value
pv value base style mixed	Long Integer	65535
pv value color mixed	Long Integer	65535
pv value font name mixed	Long Integer	65535
pv value font size mixed	Long Integer	65535
pv value format mixed	Long Integer	65535
pv value hor alignment center	Long Integer	2
pv value hor alignment default	Long Integer	0
pv value hor alignment left	Long Integer	1
pv value hor alignment mixed	Long Integer	255
pv value hor alignment right	Long Integer	3
pv value ignore	Long Integer	2
pv value ignore base style	Long Integer	65535
pv value ignore color	Long Integer	-1
pv value ignore font name	Long Integer	65535
pv value ignore font size	Long Integer	65535
pv value ignore format	Long Integer	65535
pv value ignore hor alignment	Long Integer	255
pv value ignore rotation	Long Integer	255
pv value ignore vert alignment	Long Integer	255
pv value mixed	Long Integer	2
pv value none	Long Integer	-3
pv value off	Long Integer	0
pv value on	Long Integer	1
pv value rotation 0	Long Integer	0
pv value rotation 180	Long Integer	2
pv value rotation 270	Long Integer	3
pv value rotation 90	Long Integer	1
pv value rotation mixed	Long Integer	255
pv value vert alignment bottom	Long Integer	3
pv value vert alignment center	Long Integer	2
pv value vert alignment mixed	Long Integer	255
pv value vert alignment top	Long Integer	1

PV Triggers

- Triggers starting with "pv trigger input" can only be used for data input action ("pv input trigger" property constant).
- Triggers starting with "pv trigger selection" can only be used for data selection action ("pv select trigger" property constant).
- Other triggers can be used for both data input and selection actions. They also can be used with the "pv drag trigger" property constant.

Triggers constants can be added in order to authorize several keys.

When the same trigger is set for both data input and selection actions, the input trigger has priority.

The wording "ctrl" refers to the Ctrl key under Windows and the Command key under MacOS.

Related command(s): PV Get area property, PV SET AREA PROPERTY.

Constant	Type	Value
pv trigger input key	Long Integer	1
pv trigger input on enter	Long Integer	2
pv trigger input on gain sel	Long Integer	4
pv trigger none	Long Integer	0
pv trigger on alt click	Long Integer	32
pv trigger on alt double click	Long Integer	64
pv trigger on click	Long Integer	8
pv trigger on ctrl click	Long Integer	128
pv trigger on ctrl double click	Long Integer	256
pv trigger on double click	Long Integer	16
pv trigger on shift click	Long Integer	512
pv trigger on shift double clic	Long Integer	1024
pv trigger select on arrow	Long Integer	1
pv trigger select on return	Long Integer	4
pv trigger select on tab	Long Integer	2

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