What's new in MULTIPROG

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About this Readme File

This README file provides further information about the new features in MULTIPROG.

For each feature the corresponding section of the MULTIPROG help provides further details. Please use the ‘Index’ of the help to find the corresponding chapters.

Table of contents

New features in MULTIPROG 4.6 3
New features in MULTIPROG 4.5 5
Additional modules of MULTIPROG 4.5 8
New features in MULTIPROG 4.1 9
Automation Interface Extensions 10
New features in MULTIPROG 4.0 and ProConOS 4.0 11
Additional Modules of MULTIPROG 4.0 13
New features in MULTIPROG 3.5 and ProConOS 3.3 16
New features in MULTIPROG 3.3 and ProConOS 3.3 21
New features in MULTIPROG 3.02 27
Appendix 1: ProConOS 3.2 42

New features in MULTIPROG 4.6

Toggle Boolean Values

Graphical worksheets (programming languages FBD, LD and SFC) in online mode can be switched to an enhanced online mode called **'Toggle Boolean Value'** mode.

In this mode, it is possible to toggle the values of Boolean variables by simply clicking and releasing the left mouse button. Depending on the type of the toggled variable, this click causes an **overwriting or forcing** of the variable. When the left mouse button is released the variable returns to its original value.

To allow toggling for a particular variable, a specific flag must be set for this variable in the variables grid worksheet.

This mode is useful during implementation of projects since Boolean values can be operated easily and quickly direct in the online worksheet without calling the 'Debug' dialog.

Network Templates

A network template is a code body - an LD/FBD network or a code sequence written in ST or IL - which has been saved as template before and which can then be inserted into POU of the same programming language in any projects.

Within this "template code", variables, instance names, address terms and comments can be substituted by placeholders which have to be replaced by the actual terms when inserting the template code into a code worksheet.

Use DIN Qualifiers in Identifiers

According to the IEC standard, variable names can consist of letters, digits and underscores. The identifier has to begin with a letter or an underscore. The use of any other character causes the compiler error "Illegal identifier".

This naming convention has been expanded in your programming system in a way that IEC variable names can also contain DIN qualifiers:

The characters `- + < >` can be used at any position *inside* the name and as *last character.* However, they cannot be used as first character of a variable name.

The DIN qualifiers `/ * #` and the numbers `0` to `9` can be used at every position of the variable name, i.e. as first character as well as inside the name and at the end.

In order to use this extension please check the option 'Use DIN identifiers' on the tab 'Build' of the 'Options' dialog.

Tooltips on Variables in ST including Online Values

Tooltips have been added to the textual editors (IL and ST). When moving the mouse pointer onto a variable or FB instance in the text editor (without clicking the object), a tooltip appears showing properties of the element under the cursor. Tooltips are available in online mode and in offline mode. Handling and setting up tooltips is identical in both modes.

To set the content of the tooltips in code worksheets

- select 'Extras > Options',
- open the dialog page 'Tooltips',
- and mark the checkboxes of the attributes you want to see inside the tooltip.

In online mode additionally the value of the corresponding variable is displayed.

Comparing the POU of two projects

This existing feature has been extended:

- More than one difference can be detected per each POU.
- The difference can be located in the current project and also in the referenced project. Therefore each difference is described by several line in the 'Info' tab of the message window.

For details refer to MULTIPROG online help and enter ‘Comparison of projects’ to the ‘Index’ tab.

New features in MULTIPROG 4.5

Variables Management

Direct Copy and Paste between Excel and Variables Grid

This item enables the easy exchange of cell contents between Excel and programming system's variables grid using the clipboard.

The variables grid supports contiguous multiple selection of cells, i.e. the selected cells must be neighbors to each other and the shape of the selection must be a rectangle.

- If the target cell contains Boolean values (e.g. cell data shall be inserted into the grid column 'RETAIN') a text "0" or an empty text indicates false (checkbox not set), all other values indicate true (checkbox set).
- If the target cell contains Integer values the text is converted to a number. If the text is empty or cannot be converted no value will be filled into that cell.
- If the target cell contains textual values, the text from the clipboard is copied. Columns containing cells with textual values are 'Name', 'Type', 'Description', 'Init' and extended properties. In case of 'Name' and 'Type' the value is limited (cut) to 30 bytes. No checks will be done regarding valid identifiers or existing data types.
- If the target cell is a cell of the column 'Usage' (list box) and the value of the clipboard is a legal keyword this keyword is used for the cell. If no legal keyword is used a default usage ('VAR' or 'VAR_GLOBAL') will be inserted.

Excel-like editing operations in variables grids

The following Excel-like editing features have been implemented into the variables grid:

- Copying one cell of the Variables Grid to the clipboard and pasting this data to several variables grid cells.
- Selecting several cells in one column and editing the current (most recently selected) cell. When finishing the edit operation by pressing <Ctrl> + <Enter>, the content of the edited cell is copied to all selected cells.
- A dialog has been implemented to create several variables by one operation. In this dialog the name of the variables is entered using a name prefix, a start number and an end number. Furthermore, the data type, usage, comment, Retain-, PDD- and OPC-flag can be set; these entries are the same for all inserted variables.
- Using <F2> for in-place editing.
  Note: In previous versions, <F2> is used to switch on/off the display of the project tree. This command is now assigned to <Shift><F8>.

Updating external variables according to the global variables

This feature allows to update all external variables of all POUs used in the resource for which the update command is called. By executing the update command, the (changed) properties of the global variables will be automatically copied to the related external variables in all POUs in the specific resource.

Example: A global variable is used in two different function blocks (each function block has its own external declaration of this variable. The user has changed the data type of the global variable using the variable properties dialog in one function block. So the global definition and one external declaration have been changed. The second external declaration has not been changed resulting in a compile error.

Feature description: By executing this new command from the context menu of a resource in the project tree, the data type and comment of the global variable are updated at the external declarations of all POU, which are used in this resource. Only existing declarations are updated, no new declarations are inserted.

Printing

Printing a range of pages from a project

Similar to Microsoft Word you can select a range of pages to be printed. This way, you can print single pages, separated by semicolon, and range of pages separated by hyphen, e.g. “1;3;5-12”.

Printing variables grid using multiple lines

When printing the variables grid and the contents of a cell cannot be printed completely into the cell area, several lines can be used for this variable. This qay, the complete content of each cell is printed. The user can switch on and off this behavior by a checking the option 'Enable word wrapping during printing' in the tab 'Variables Grid' of the 'Options' dialog.

Miscellaneous

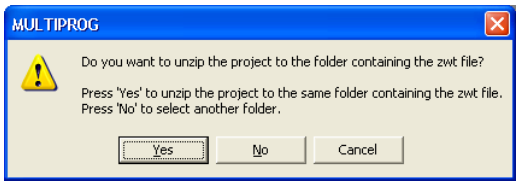
PLCopen XML Import/Export

PLCopen has defined a new tool-independent XML Exchange Format. MULTIPROG 4.5 supports this exchange format for IL, ST, LD (Graphic Editor), FBD. For more information please refer to: http://plcopen.org/TC6/XML_Intro.htm.

Opening a zipped project

This feature is related to opening a zipped project (*.zwt). The procedure is:

- If a project is currently open, this project is closed first.
- After selecting a zwt file, the following message box appears:



  Clicking 'Yes' unzips the project into the folder of the zwt file. Pressing 'No' opens the 'File Open' dialog for selecting another folder. Here, the default project folder, as defined in the 'Options' dialog, is proposed.

- The zipped project is unzipped and opened.

Creating a new project (from a template) and uploading a zipped project from the PLC results in “Untitled” (same as previous versions).

Drag & Drop in project tree

Currently, the project tree supports Cut/Copy/Paste. Additionally, Drag & Drop is implemented to move or copy objects (worksheets, POUs, resources …) within the project tree.

Implicit addressing of DWORD, WORD, BYTE variables

This feature enables direct access to parts of BIT-STRING variables without using the BIT_UTIL functions. Examples:

- myDWORDvar.x22 (Bit 22)
- myDWORDvar.b1 (Byte 1)
- mYDWORDvar.w0 (Word 0)

This feature is supported by PLC adaptations to ProConOS 3.2 (and higher).

1000 Elements in one STRUCT Definition

The number of elements per each STRUCT definition has been increased from 200 to 1000.

Additional modules of MULTIPROG 4.5

Integrated Source Code Control system

This feature is an extension of MULTIPROG MultiUser module.

It is quite often useful to transfer data of a MULTIPROG project into an SCM system. This is done by using an interface which is supported by several different SCM systems.

Microsoft uses such an interface (called SCCAPI) to integrate Visual SourceSafe® with Visual Studio®.

This SCCAPI interface is also supported by PVCS Dimensions® from Merant and several other SCM programs. The existing MULTIPROG MultiUser-functionality is usable with the SCCAPI. Based on the documentation of the SCCAPI interface, the MS Visual SourceSafe® can be used to store MULTIPROG data.

For more detailed information's refer to the 'FDS integration of SCC systems in MULTIPROG'.

Fixed Format LD Editor

The Fixed Format LD Editor is grid based. This means objects are placed into a cell like spreadsheet. Auto-routing is implemented by which the connection lines are placed automatically by the system. Different display modes (layouts) allow displaying more or less details for each variable and consequently display smaller or larger parts of the worksheet. Comments can either be assigned to network blocks (left power rails) or positioned freely.

New features in MULTIPROG 4.1

Enlarge %I/%Q > 64/64 k (IPC_40)

The size of the I/O area has been increased for more than 64 kB each. This is an optional feature. If you are interested please ask for details.

Automation Interface Extensions

The automation interface which is an optional module of MULTIPROG, has been extended by several functions which were available by DDE. For details refer to the documentation of the automation interface.

Create Global Variables from Externals

In the project tree the menu item 'Create Global Variables from Externals' has been added to the context menu. This menu item is available if a resource is selected. When executing this new feature all programs and function blocks which are used in this resource will be scanned for external variables. These externals are compared with the global variables. If not yet existing, an appropriate global variable will be generated for each external variable. For details please refer to the MULTIPROG help (page 'Creating global variables from external variables').

Number of recent projects increased in the 'File' menu

The number of recently used projects in the 'File' menu has been increased from 4 to 9.

Additionally the complete path of the project (selected in the menu) is displayed in the status bar.

Step Comment in SFC

In SFC it is possible to assign a comment to a step. In the properties dialog of the step a new button ‘Comment’ is available to create or edit the comment. Furthermore, it is possible to edit an existing comment by double clicking it. When moving the step the comment is also moved. The comment is displayed above the step (centered). Comment may overlap other objects.

IntelliSense with Data Types

In the text editors the IntelliSense feature is used to display components of a structured variable. In addition to the name of the component also its data type is displayed (same display as in the variables dialogs).

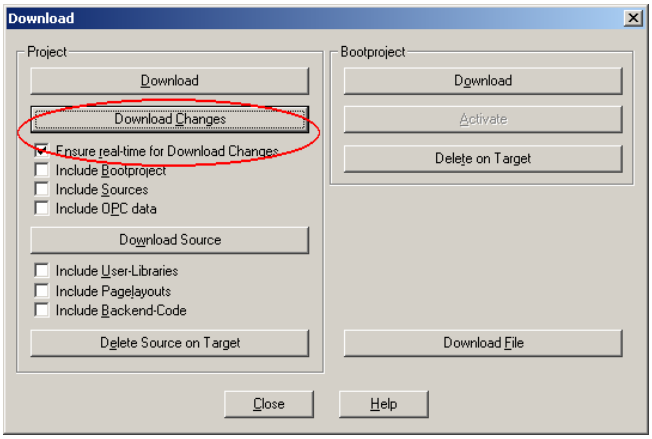
New features in MULTIPROG 4.0 and ProConOS 4.0

Download Changes (IPC_40)

Download Changes enables you to perform nearly any kind of changes in a project and download it while the PLC keeps running. The performed changes may affect the whole project. This feature is intended to ensure the real-time control by the PLC while the changes are downloaded.

In spite of its high requirements this feature is easy to use. The project development can be continued normally. For example, the project can be compiled at any time to check it for errors. Or, the changes may be tested with a simulation before sending them to the control system.

To send the compiled project to the running PLC, open the 'Download' dialog as usual. This dialog has been extended by the 'Download Changes' button which you just have to click instead of 'Download'.



Due to the amount of changes and a heavy CPU load it may happen that Download Changes cannot be performed and at the same time the PLC controls the process in real-time conditions. In such cases the controlled process must be changed to a state where real-time violations are uncritical. Then, Download Changes can be performed by explicitly allowing real-time violations.

The main advantages of Download Changes are:

- Any changes in code and data are allowed for several POU simultaneously including changing formal parameters of FB or functions.
- New POUs can be created and used.
- New libraries can be inserted and used.
- Task cycle times or watchdogs can be modified.
- The PLC continues controlling the process in real-time.

Data Type LREAL (IPC_40)

The data type LREAL is available with ProConOS 4.0 for Intel targets. This allows high-precision calculation with decimal values.

LREAL can be used with the 'Usages' VAR, VAR_GLOBAL, VAR_EXTERNAL, VAR_INPUT, VAR_OUTPUT, VAR_IN_OUT. Initial values and literals (constants) are supported. This data type can be used for retentive as well as non-retentive variables. Furthermore, components of user-defined data types can use the data type LREAL.

The following IEC standard functions support the data type LREAL:

ADD, SUB, MUL, DIV, MOD, the most important type conversion functions (LREAL_TO_REAL, LREAL_TO_DINT, LREAL_TO_UDINT, REAL_TO_LREAL, DINT_TO_LREAL, UDINT_TO_LREAL), ABS, SQRT, LN, LOG, EXP, EXPT, NEG, trigonometric functions, MIN, MAX, comparison functions.

LREAL variables is can be monitored in debug mode (online) with powerflow. Overwriting is possible. LREAL variables can be included in the PDD.

Logic Analyzer and directly represented variables (%IL xxx, %QL xxx, %ML xxx) of data type LREAL are currently not supported. This also includes access to shared memory (%ML3.xxx) and system memory (%ML 1.xxx).

Additional Modules of MULTIPROG 4.0

MultiUser

Short programming times by parallel development with help of the 'multi user' functionality.

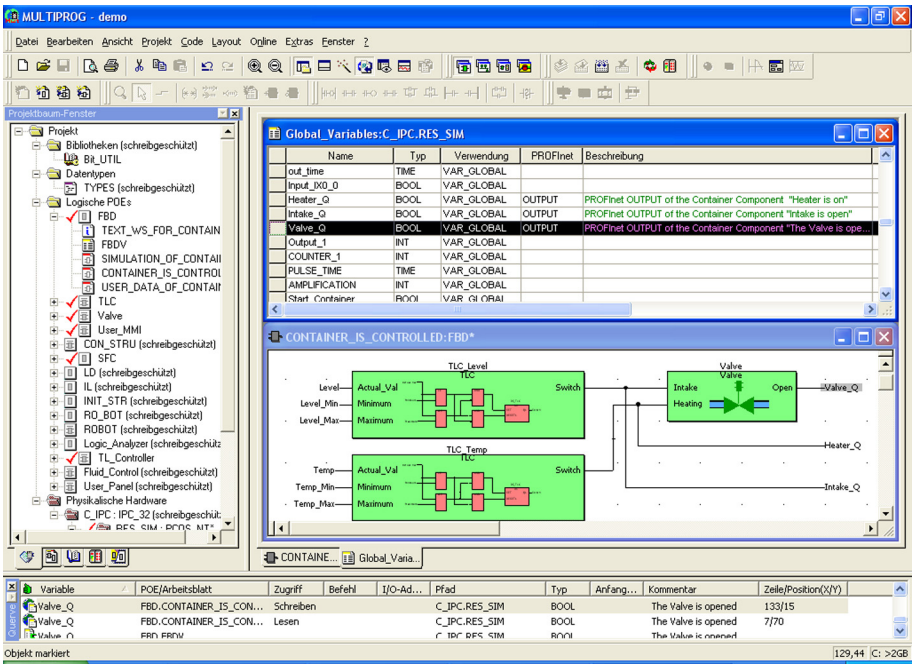
The MultiUser feature is a powerful tool to provide safe access to project source files when several users are working on the same project at the same time. To achieve a safe and fast MultiUser development environment, the project is stored as server project on a network server PC and each user has to create a client project on his PC.

The MultiUser feature provides several functions to handle a MultiUser project in a fast and easy way, e.g. automated server and client project creation, updating the client and server projects, checking in and out source files or inserting and deleting parts of the projects.

In the client project all nodes (files) have read-only status by default. To be able to work on the MultiUuser project, the individual node(s) have to be checked out in the project tree of the client project. After this, the checked out nodes are locked in the server project, i.e. no other user has write access. Due to this, source files can not be changed by several users at the same time.

In addition, client projects can be compiled as known from single user projects and downloading and debugging is possible if the corresponding resource is checked out.

Please ask for the detailed specification of the MultiUser feature!



Example of MULTIPROG (client project) with checked out POU

Automation Interface Toolkit enables a closer Integration of MULTIPROG into your automation software

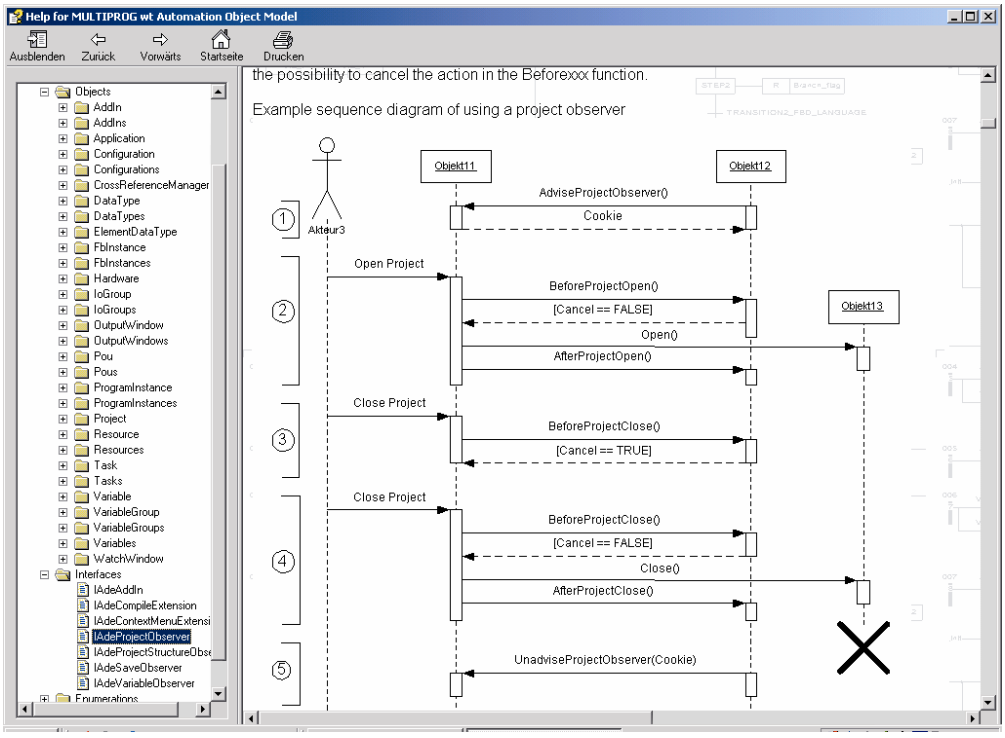
The open architecture of MULTIPROG allows to follow a new direction in the creation of automation software. It is possible to create tools which lead to real competitive advantages in the engineering sector - beyond PLC programming itself.

Automation Interface guarantees consistent engineering data

Modern automation suites include software tools for nearly all projection phases and tasks: E-CAD, fieldbus/network configurator, PLC programming, SCADA, etc. They all access partly the same objects. However, there is often a lack of data exchange, i.e. a common pool which is available equally for all components. The solution for this problem is the automation interface.

- Via the automation interface, MULTIPROG® offers its data to other tools
- MULTIPROG® allows that its own data are externally created, modified or get additional attributes.
- As all essential data can be displayed in MULTIPROG®, a frequent switching among the different tools is inapplicable during PLC programming and commissioning.
- Observers guarantee data consistence with other tools.

Please ask for the detailed feature description of the Automation Interface!



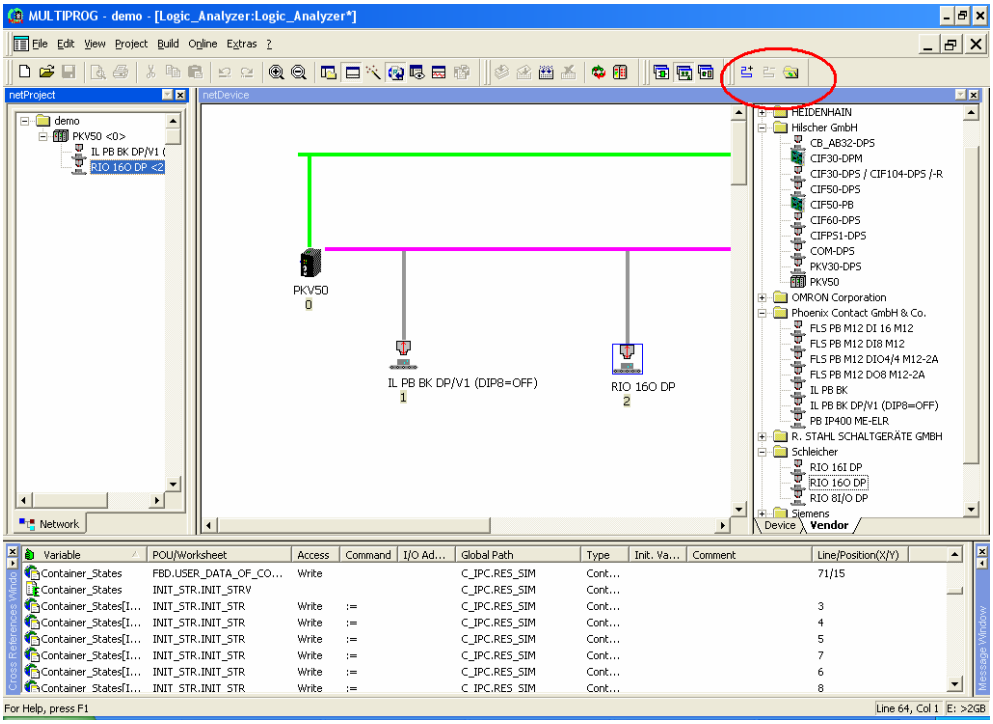
Automation Interface Extension with MULTIPROG 4.0

The Automation Interface is available since MULTIPROG 3.02. With MULTIPROG 4.0 the Automation Interface has been extended to support the ‘Extended IEC61131-3 Import and Export’.

Integrated Automation Software by ActiveX and Add-Ins

Different tools of different manufacturers are often used in different automation tasks. ActiveX Controls can be integrated as control bars which allow extending MULTIPROG by other automation software.

The MULTIPROG Add-In interface allows the integration of ActiveX Controls with menus and toolbars or the implementation of additional customer-specific functionalities.



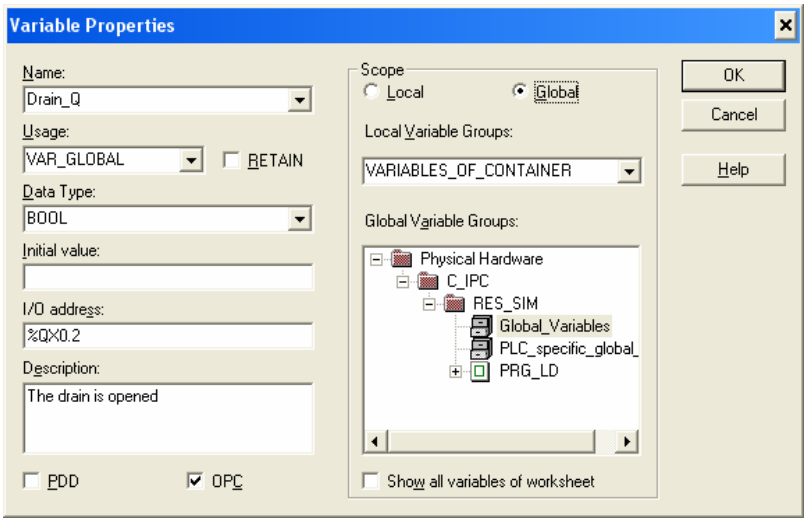
Example of the Integrated SyCon.net witch is plugged in to MULTIPROG via the automation interface and Active X control with an own toolbar.

New features in MULTIPROG 3.5 and ProConOS 3.3

Faster and easier use of variables in the editors

The variable dialogs have been redesigned. Now, all dialog elements are shown on a one dialog (not on various property sheets). This results in three main advantages:

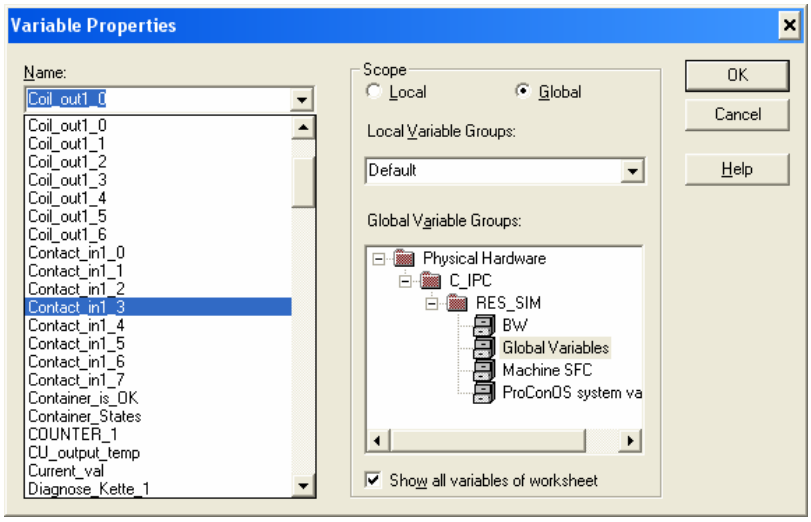
- All properties can be seen at a glance, there is no need to click through various dialog tabs.
- Operation is easier and more intuitive.
- Operation is faster, as there is no need to switch between the dialog tabs.



Operations in the variable dialog:

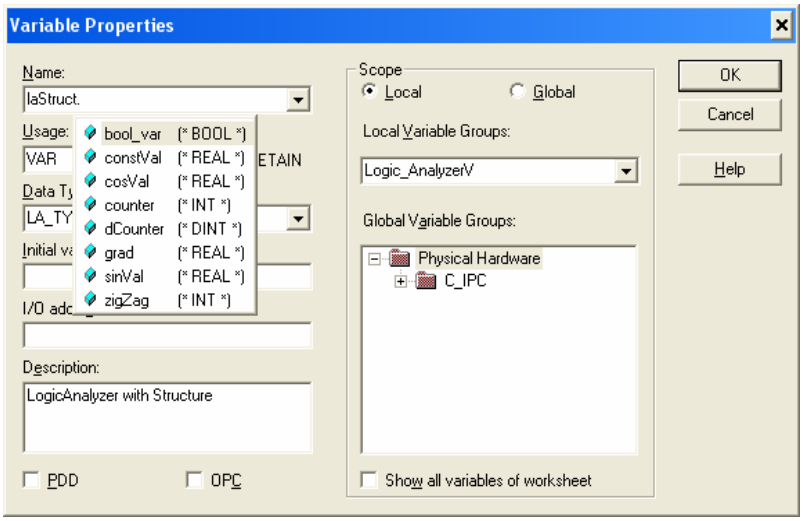
- Insert global or external variables. The dialog automatically generates the IEC declarations.
- Auto-complete mechanism within the comboboxes 'Name', 'Usage', 'Data Type' and 'Local Variable Groups' facilitate declaration and prevent from searching in long lists.
- Variables are displayed according to the local or global scope radio button.
- The checkbox 'Show all variables of worksheet' determines whether only the selected group or all variables of a worksheet are displayed. Anyhow, this checkbox does not influence variable creation since a new variable will always be inserted into the selected variables group.
- The settings made in 'Usage' and 'Data Type' are stored when inserting a new variable. The saved settings become active when the next new variable is inserted.

- The settings of the radio button 'Scope', the combo box 'Local Variable Groups', the tree control 'Global Variable Groups' and the checkbox 'Show all variables of worksheet' are stored in the POU and used when the dialog is displayed the next time.
- The comboboxes 'Name', 'Data Type' and 'Local Variable Groups' are expanded to the height of the dialog. This way, more entries are visible without scrolling.



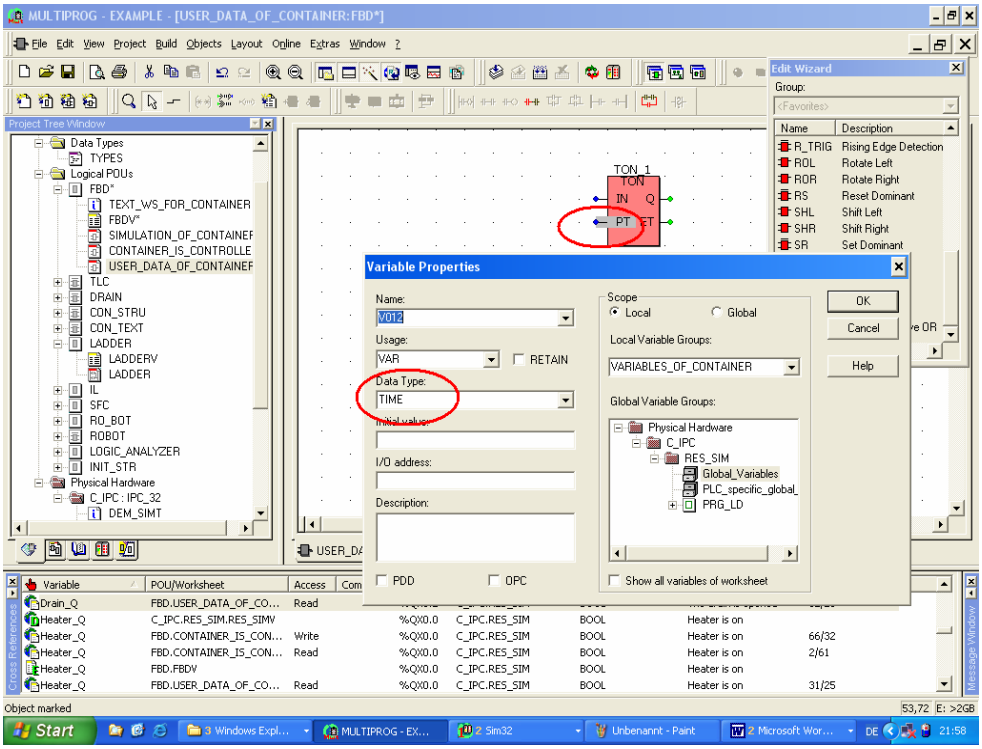
IntelliSense for structured data types

The variables dialog now offers IntelliSense for structured data types.



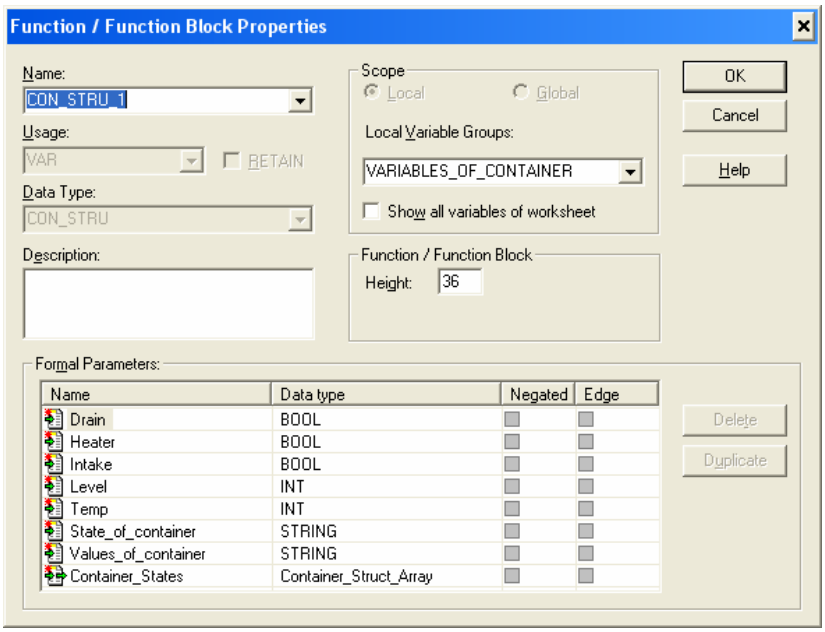
Filtering variables according to formal parameter data type

The variables list is filtered according to the data type of a formal parameter of a function or function block.



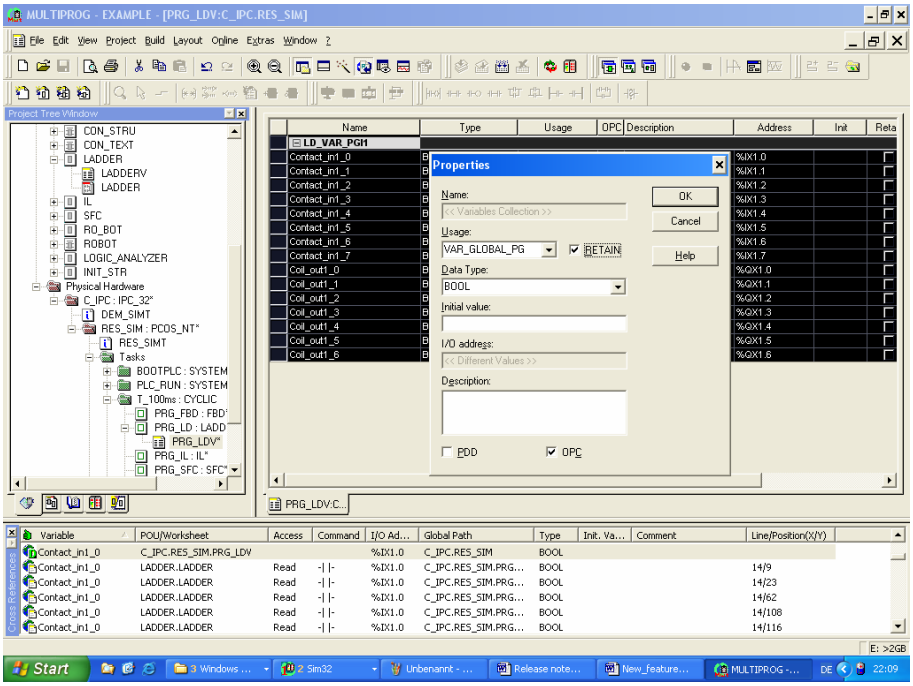
New dialog for functions and function blocks

A common dialog for functions and function blocks has been implemented.



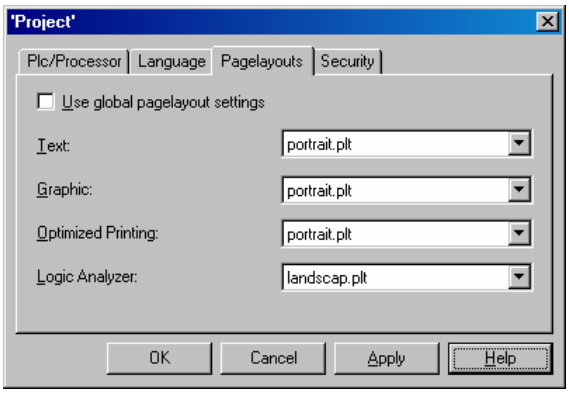
Changing the properties of variables in the variables grid

The properties of variables marked in the variables grid can be changed in one step. For example, the 'Retain' or 'OPC' flag can be set for all selected variables.



Pagelayouts on project level

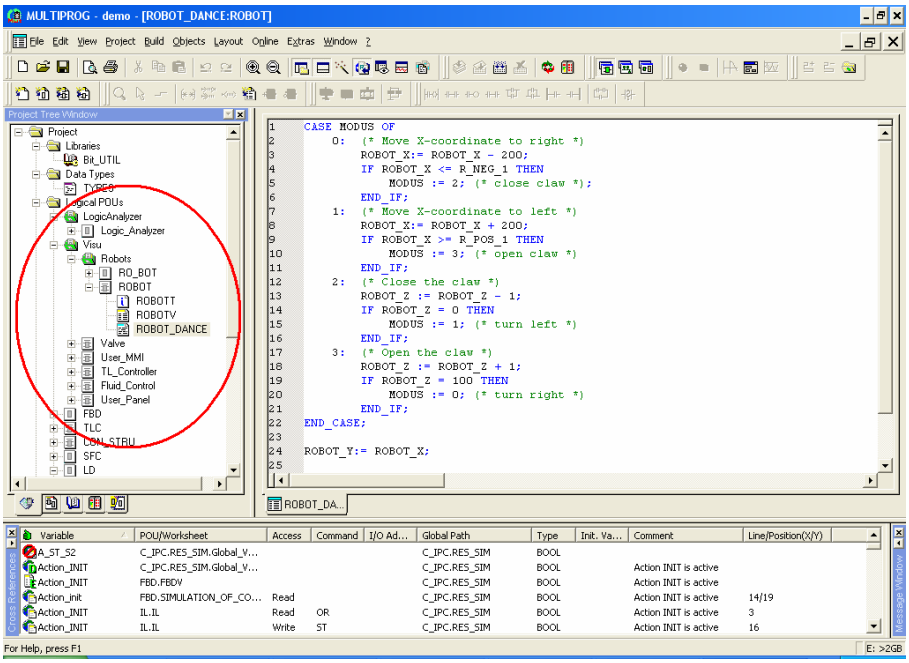
This feature enables the use of pagelayouts also on project level. If you select project-specific pagelayouts in the dialog tab 'Pagelayouts', these settings are stored together with the project and are still available when reopening the project.



New features in MULTIPROG 3.3 and ProConOS 3.3

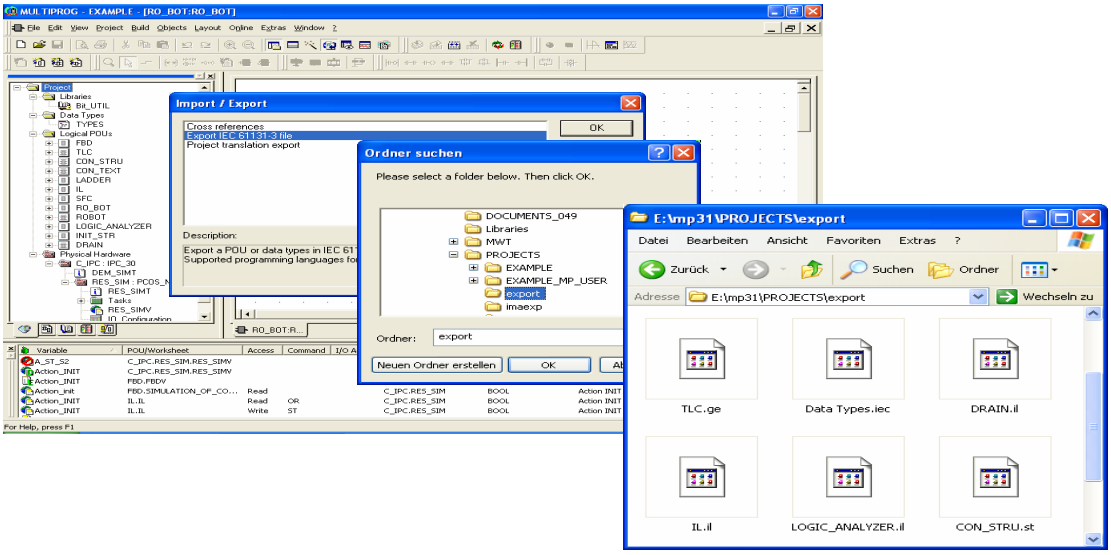
Organizing POUs in groups improves project clearness

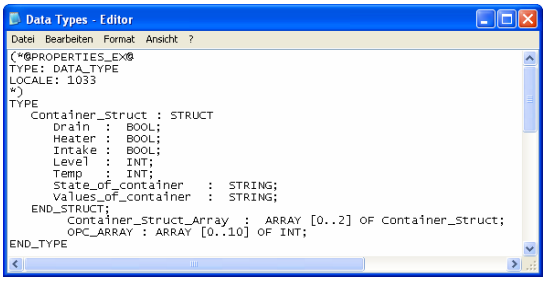
POU groups can be used in the project tree for project organization purposes. This is especially useful if many POU are used in one project.

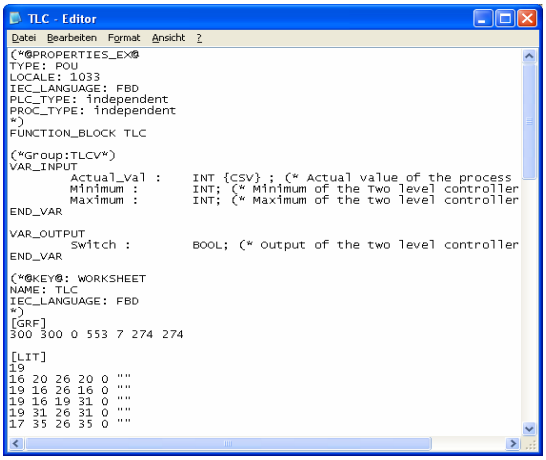


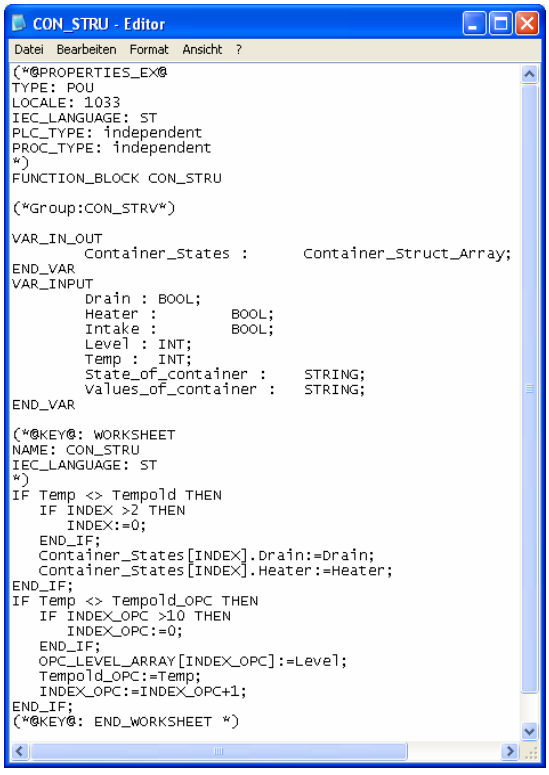
Exchanging POU data with external tools using the Extended POU Import/Export

Based on the PLCopen export, now graphical POUs (FBD, LD, SFC) and the Physical Hardware subtree (global variables lists) can as well be exported and imported.



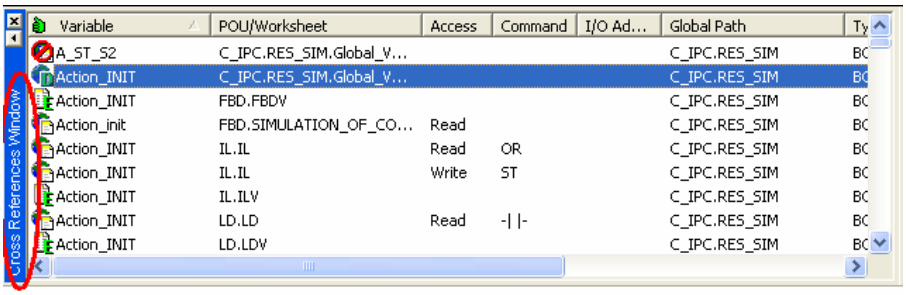






Display name of control bars

To get a better overview on the visible control bars, the name of the control bar is displayed.



Copying the contents of the output window

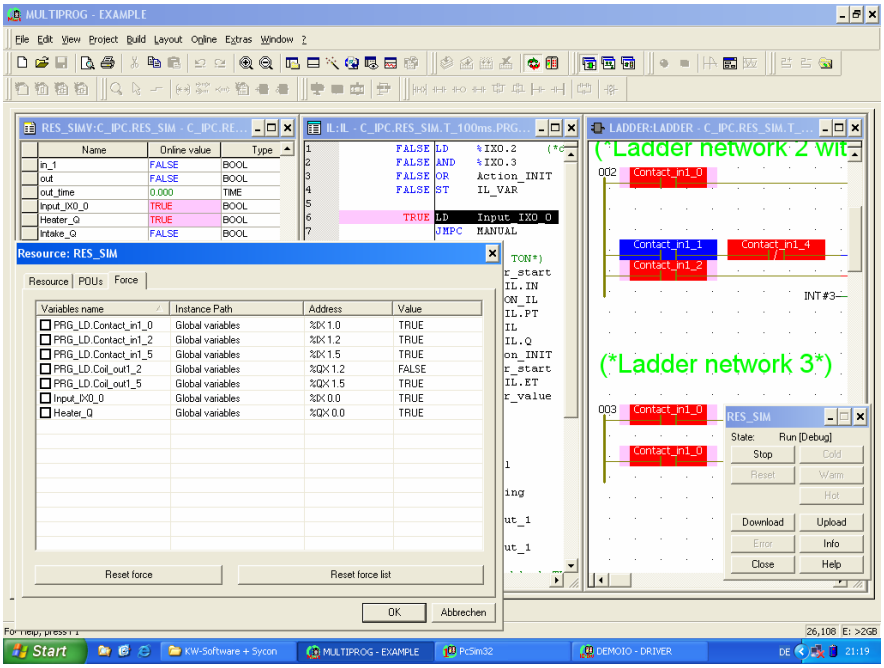
The contents of the output window can be copied to the clipboard and pasted in any document.

New PDF manual available

The HTML Help system has been converted to PDF format. So, a complete PDF manual is available again.

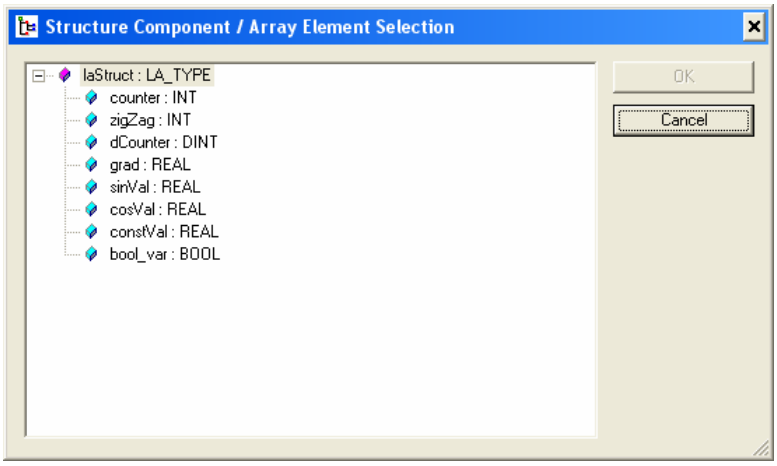
Force list (ProConOS adaptation)

The force list displays all forced variables which can be reset en-bloc or individually by selecting them in the list. The list is displayed on a separate dialog tab of the 'Resource Info' dialog. During online monitoring in the programming editors, forced variables are marked by a different background color.



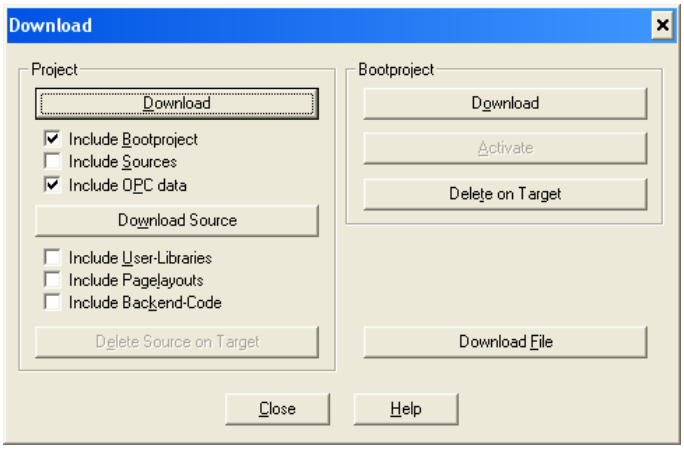
User-defined data types in the Logic Analyzer

Elements of arrays or structures can now be recorded using the Logic Analyzer. When selecting an array or a structure for recording, a dialog appears. Using this dialog the element to be recorded can be selected.



Downloading a boot project or project archive together with the project (ProConOS adaptation)

The 'Download' dialog of the resource (invoked from the resource control dialog) has been extended by two additional checkboxes. Using these options you can additionally download the boot project and/or the zipped project when downloading the project. The setting is stored with the project at the resource. When executing the download using the 'Project Control' dialog (in case of several resources in the same project) these settings are as well available.



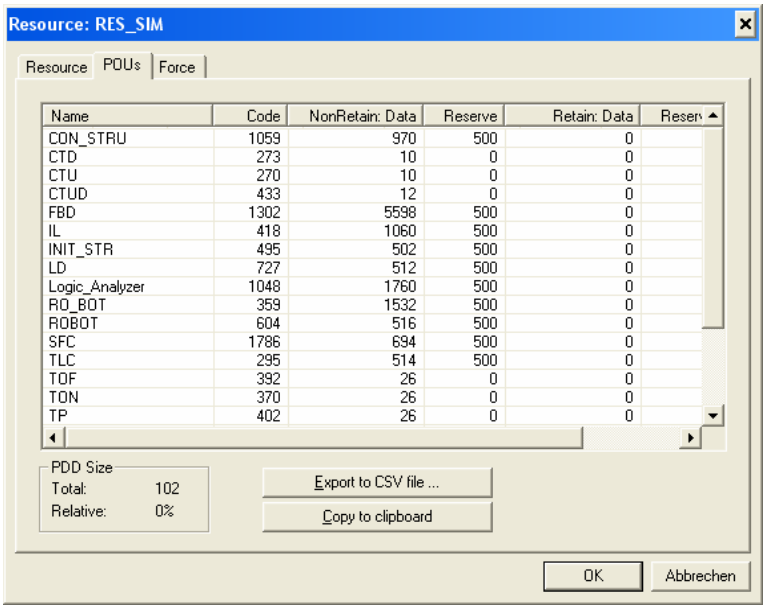
Confirm when starting/stopping the PLC

This option can be defined in the 'Options' dialog. Having set the option, you have to confirm an appearing message dialog each time you start or stop the PLC.

Displaying resource load (ProConOS adaptation)

The display of the resource load has been improved. In the 'POU' tab of the resources info dialog the following features have been added:

- For each POU the number of instances is displayed.
- The size of the PDD is displayed.
- The code size of the init code is displayed also as percentage.
- The information given in this dialog can be
  - copied to the clipboard.
  - exported to a CSV file.



PDD > 64 kB with ProConOS 3.3

The size of the PDD has been increased. This feature is available with ProConOS 3.3 and the PLC-adaptation IPC_33. Now, up to 16,384 variables can be stored at the PDD with an average name length of 63 characters.

New retain handling with ProConOS 3.3

The new retain handling ensures that the PLC can be started with a hot or a warm start after changing retain data. Up to now a cold start was necessary.

New features in MULTIPROG 3.02

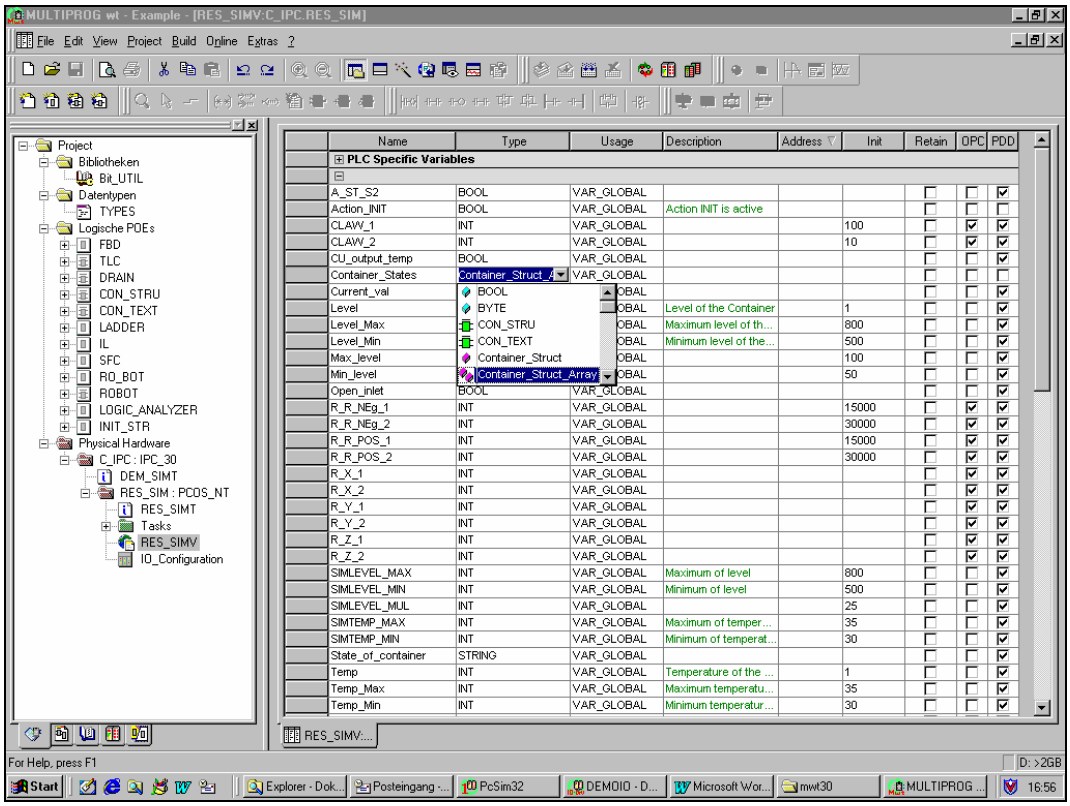
Extended online help system

Many existing parts of the MULTIPROG help system have been extended from MULTIPROG 2.1 to MULTIPROG 3.02. The MULTIPROG 3.02 help system now additionally includes parts of the MULTIPROG 2.1 manual. With MULTIPROG 3.02 the former "MULTIPROG Manual" has been replaced by the extended help system and the new "MULTIPROG Quickstart Manual".

In particular, the tutorial "7 minutes for an easier startup" has been added, containing videos (English) which support new users.

Table oriented variables management

To make the declaration of variables easier, the textual declaration of variables has been replaced by a table oriented variables management.



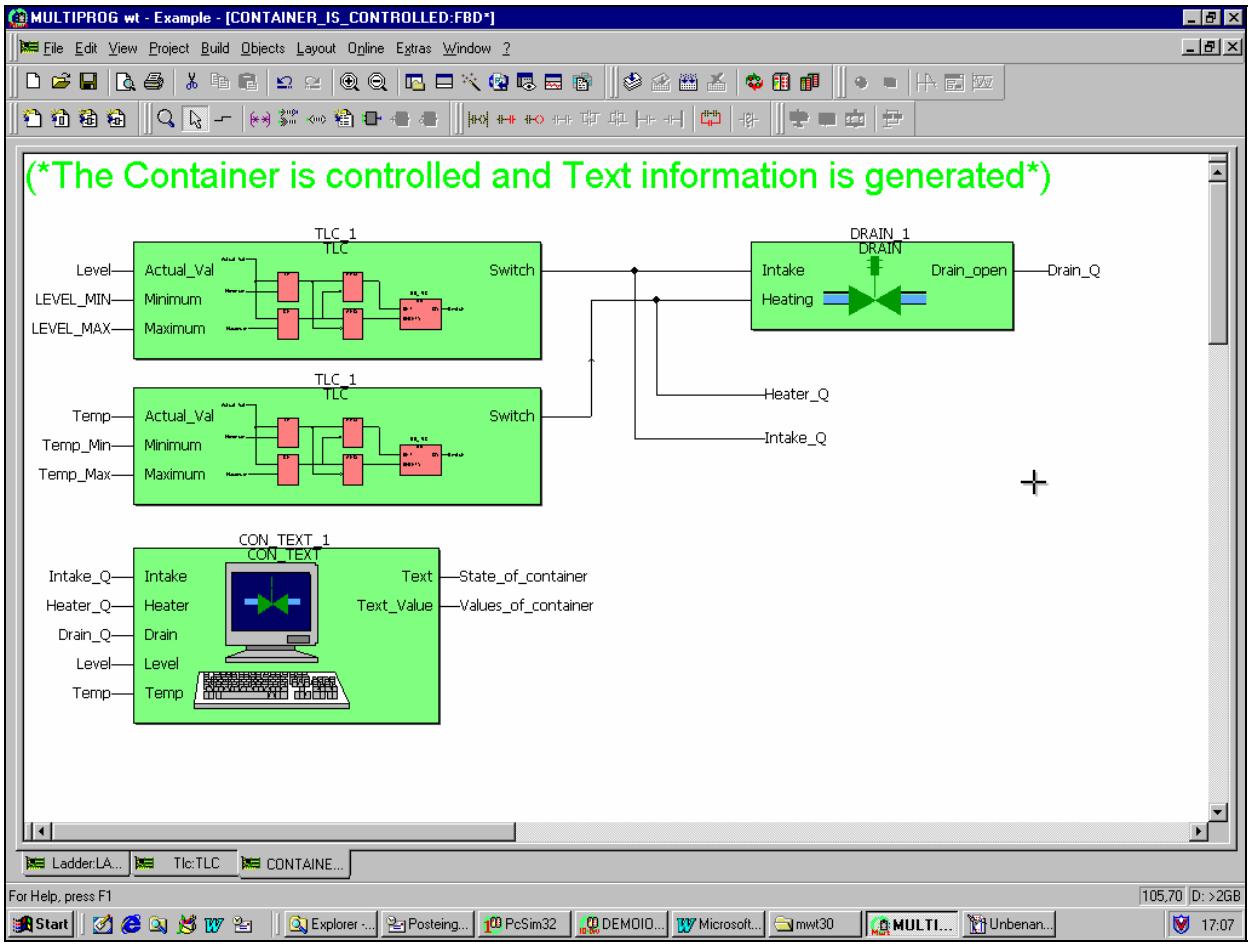
All variables are managed within a grid control which has a similar look and feel as the cross references list. Editing features are:

- easy sorting by clicking on the title bar
- grouping of the variables
- filtering
- hiding and showing columns
- cut/copy/paste
- drag & drop
- indication of multiple declarations
- extendable properties

Reference to MULTIPROG help system: Please refer to the help chapter 'Editing and developing a project/Declaring variables and instances in variables worksheets'.

Pictures inside FBs in the graphical editor

User-defined pictures inside FBs make it easier to comprehend the functionality and purpose of FBs.



Scalable enhanced meta files (*.EMF) can be shown inside a function block or function for better documentation purposes. These pictures can be added for firmware and user blocks.

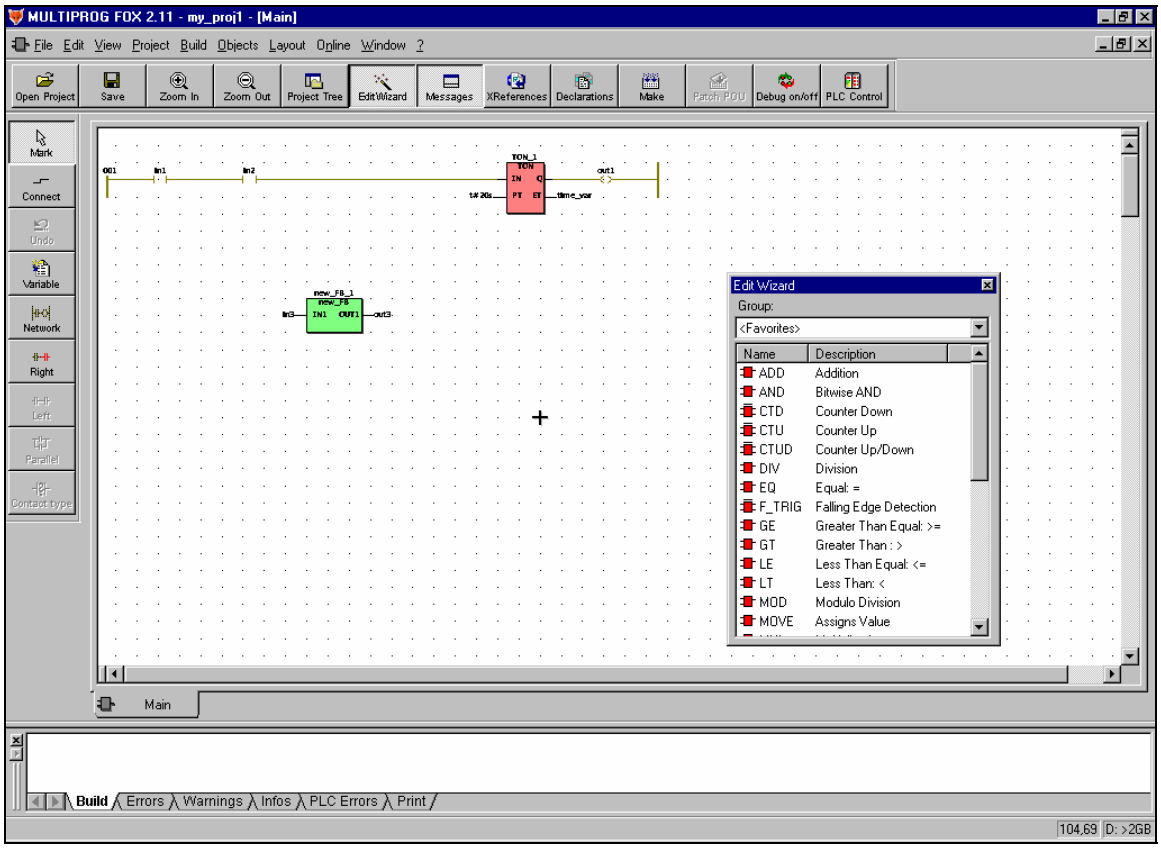
Windows Enhanced meta files (*.EMF) are vector oriented so that they can be zoomed to any size. EMF files also give the possibility to include simple bitmaps.

A new feature in the graphical editor even allows showing the content of a FB itself inside of the green representation of the FB call.

Reference to MULTIPROG help system: Please refer to the topic 'Text editor, graphic editor and edit wizard – General description/Graphic editor – General description/General editing operations in the graphic editor/Pictures inside the graphical representation of FUs and FBs'.

Edit Wizard with descriptions

Descriptions in the Edit Wizard make it easier to comprehend the functionality and purpose of functions and FBs.

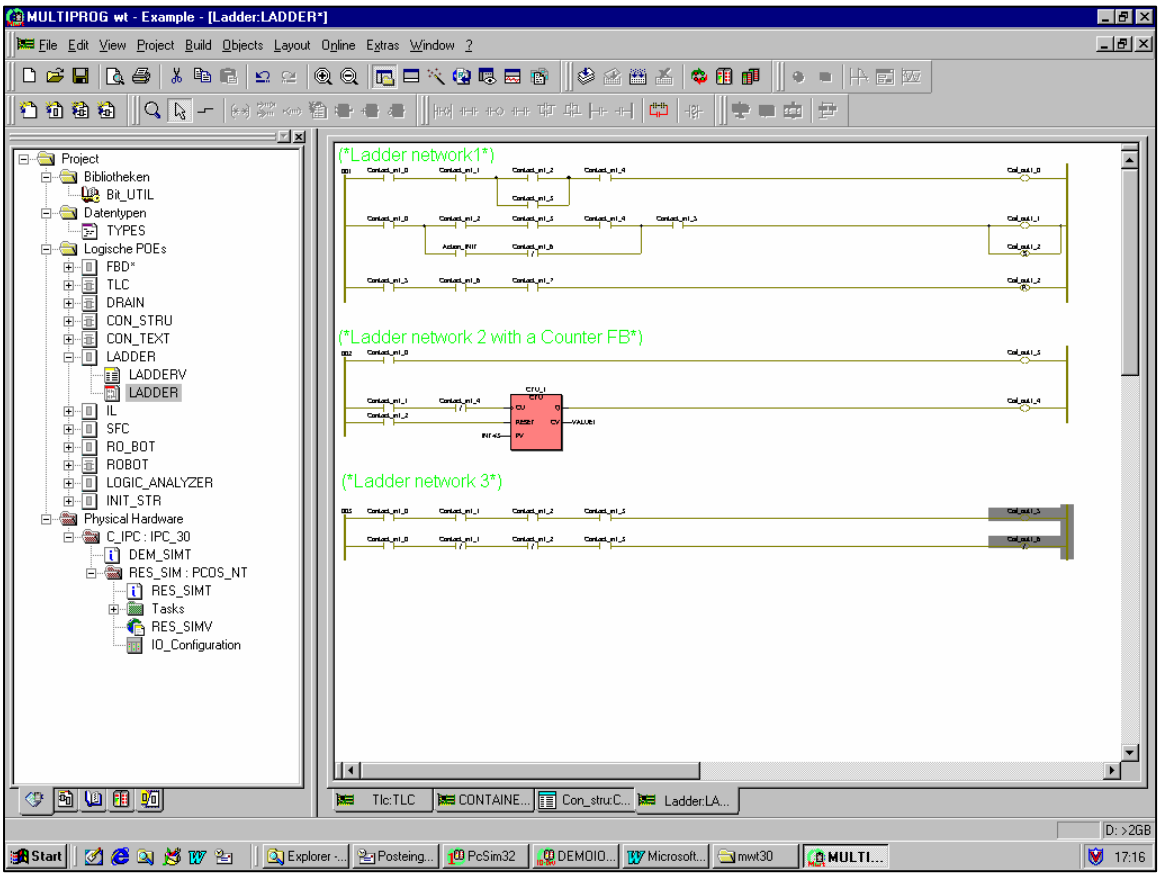


A textual description can be added to each firmware function and firmware FB.

Reference to MULTIPROG help system: Please refer to the topic 'Text editor, graphic editor and edit wizard – General description/Edit Wizard – General description' and open the context menu within the Edit Wizard.

Alignment of Power Rails

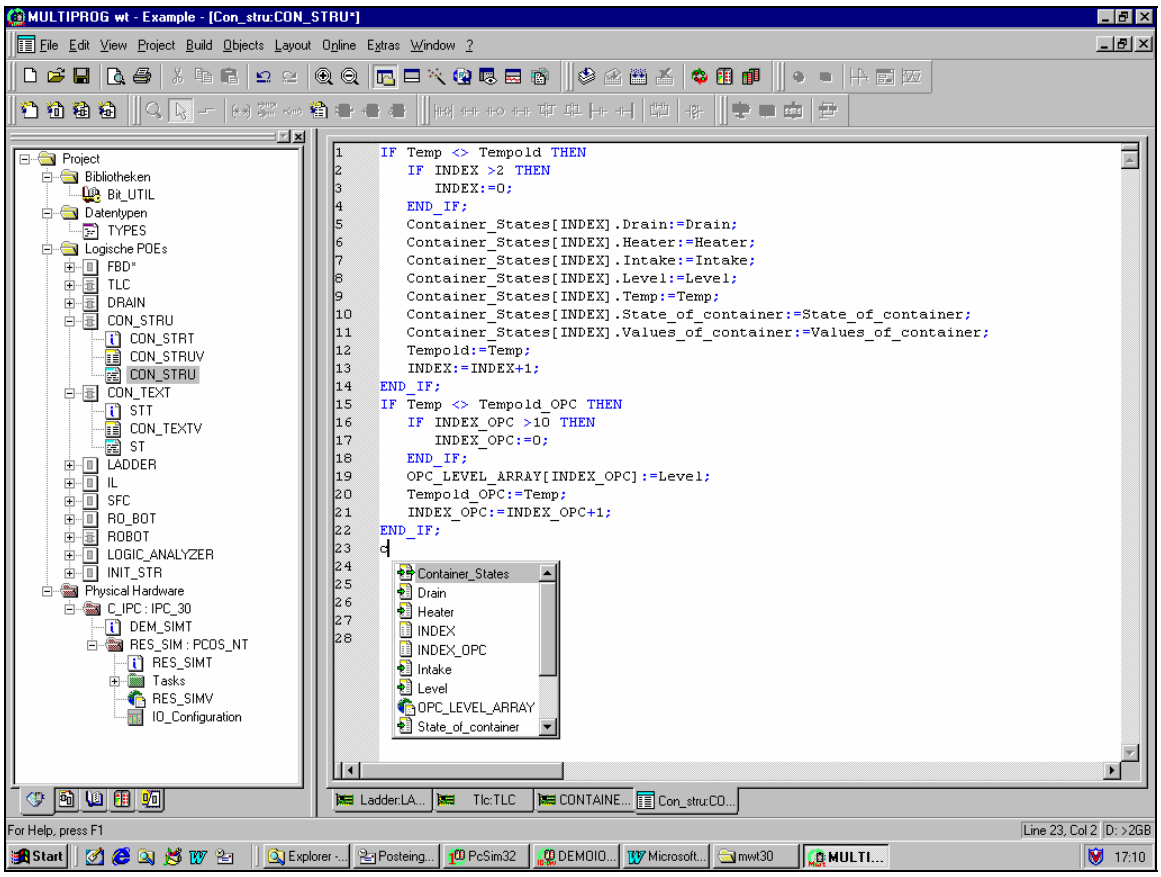
Power rails can be horizontally aligned easily.



Reference to MULTIPROG help system: Please refer to the topic 'Editing and developing a project/Editing LD using the graphic editor/Aligning power rails.

IntelliSense in the text editor

While editing a textual program, IntelliSense makes it easier to insert variables, FBs or data types.



“IntelliSense” is a technology known from Microsoft Visual Basic.

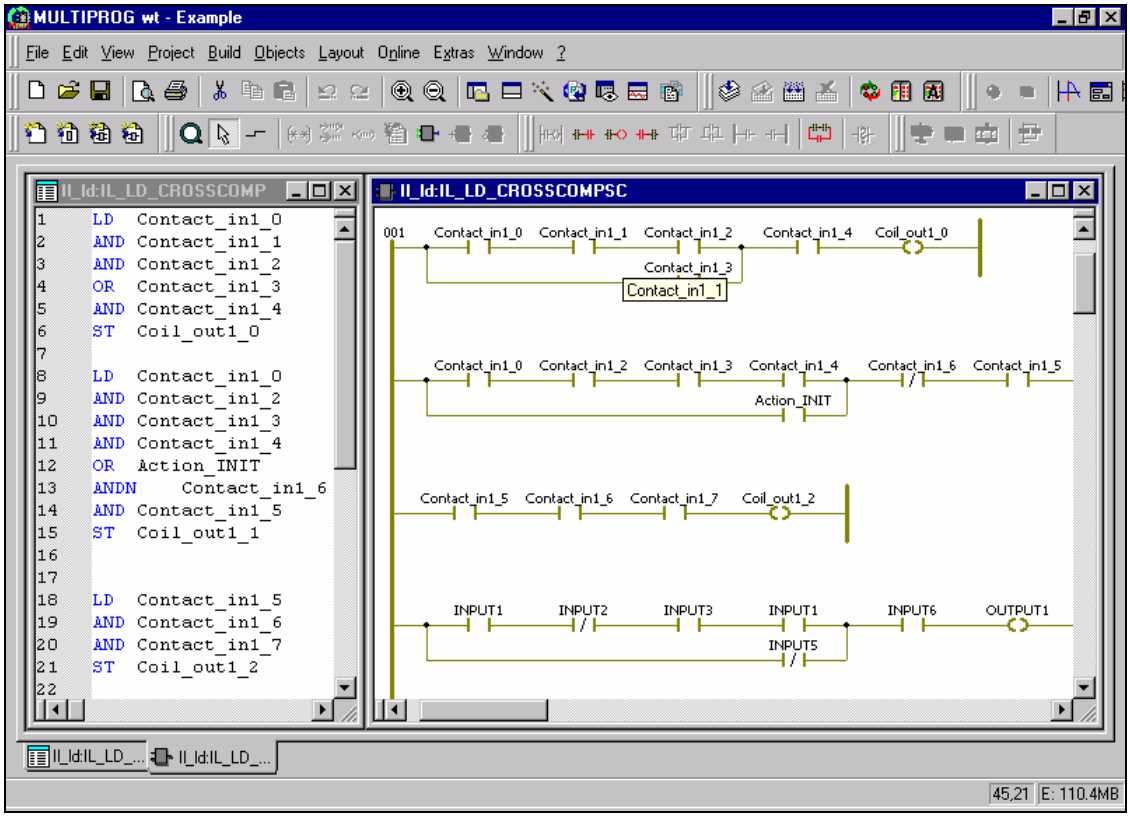
While entering the first characters of a variable or FB instance the IntelliSense pop-up window shows all the corresponding declarations. Pressing enter is enough to insert the completed name.

In the same way, entering a '.' after the name of a STRUCT or FB instance, opens the IntelliSense pop-up window with a list of all related components or parameters.

Reference to MULTIPROG help system: Please refer to the topic 'Text editor, graphic editor and edit wizard – General description/Text editor – General description/IntelliSense function in the text editor'.

Source conversion

The source conversion functionality allows "switching" POU code between IL, FBD and LD in order to re-use applications written in other programming languages or to support a customer's preferred programming language.



Possible conversions:

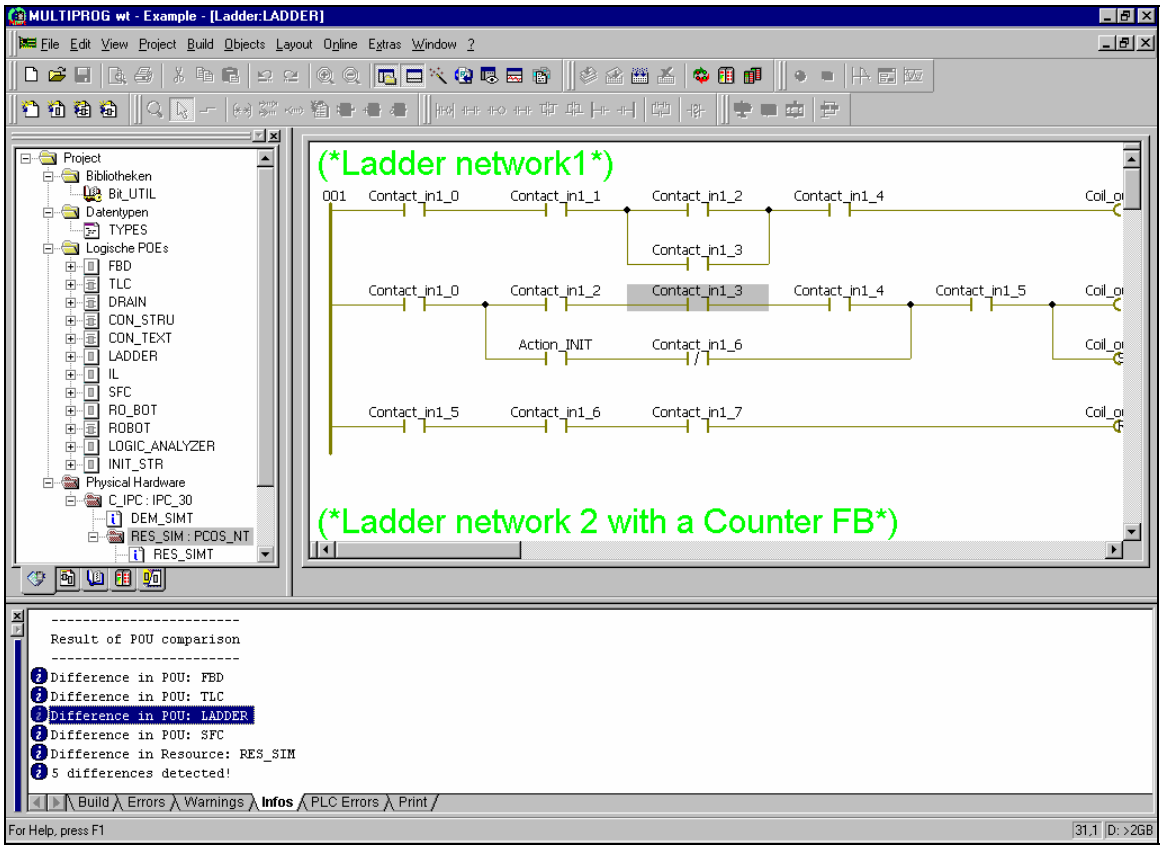
- The code of a POU written in FBD can be automatically converted into an IL POU or an LD POU.
- POUs written in LD can be automatically converted into IL POUs or FBD POUs.
- POUs written in IL can be automatically converted into FBD POUs or LD POUs.

The logic and execution order of the code remain the same after source conversion.

Reference to MULTIPROG help system: Please refer to the topic 'Editing and developing a project/Editing in IL using the text editor/Source conversion for IL, FBD and LD'.

Compare POUs

The 'Compare POUs' functionality makes it easier to compare different versions of a project or to compare projects on a Laptop with a project on a file server.



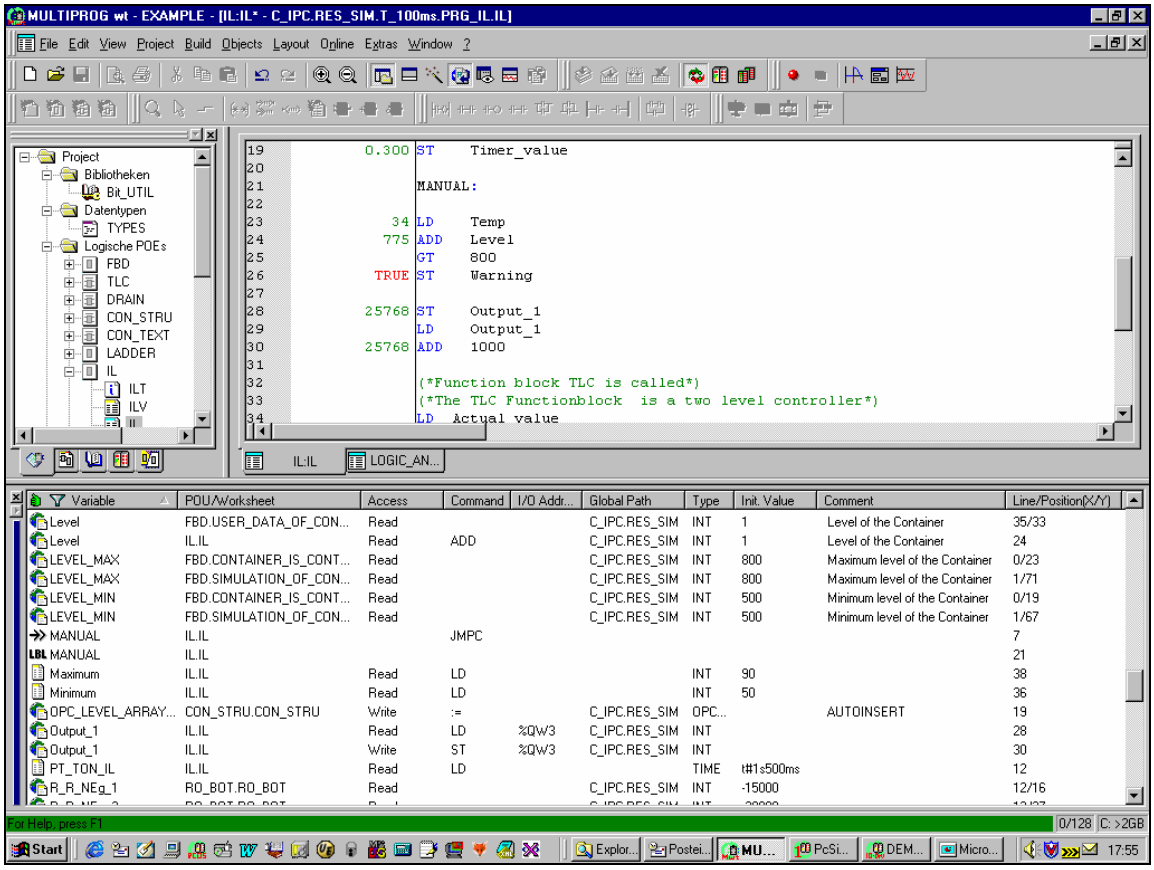
Compare POUs bases on executable code level.

- Changes in comments do not influence the result
- Differences are shown in the message window
- Easily jump to a difference by double-click
- Comparison of POUs on PC and PLC possible

Reference to MULTIPROG help system: Please refer to the topic 'User interface and general project handling/Handling a project/Comparing the POUs of two projects'.

Cross references

The powerful cross reference tool has been further extended and optimized.



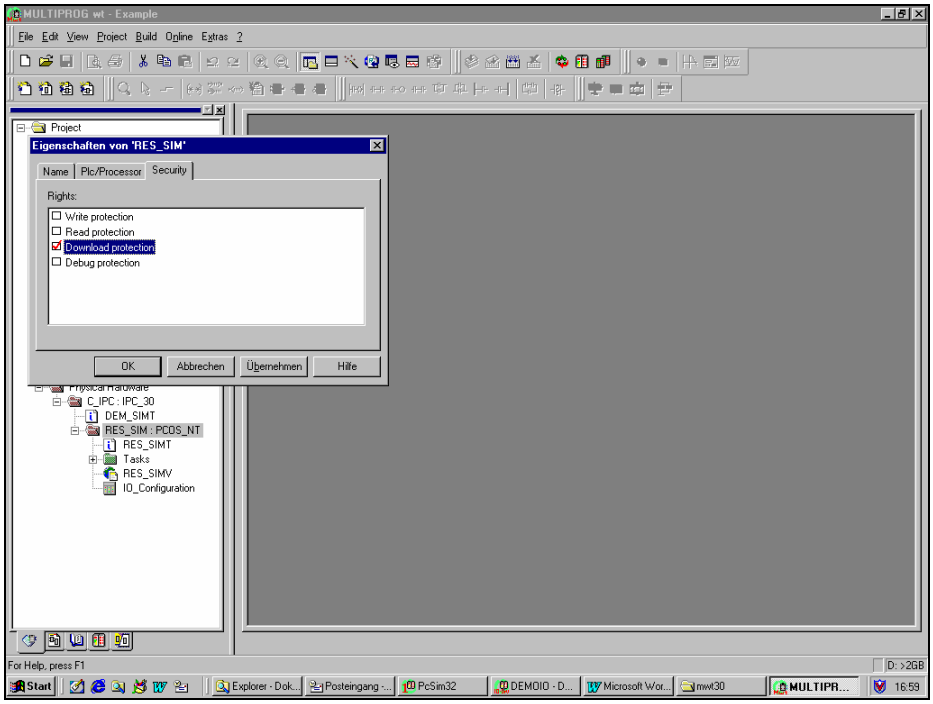
The extended cross references support:

- Display of unused variables
- Order of the columns can be changed via drag & drop
- New column 'Initial Value'
- New icons to indicate a filter applied and to display if the cross references are up to date.

Reference to MULTIPROG help system: Please refer to the topic 'User interface and general project handling/User interface – General description/Cross reference window'.

Password protection

A password protection has been added allowing restricted access to entire projects or parts of projects or libraries.



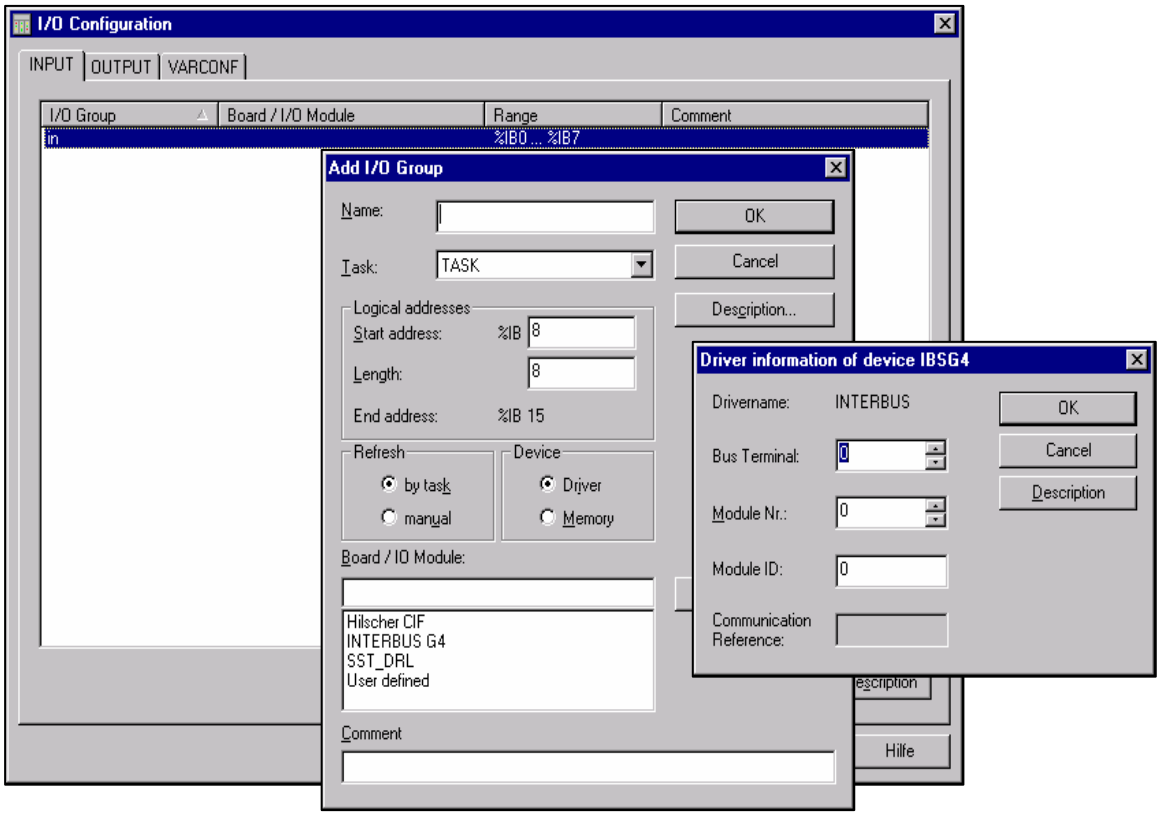
The password protection mechanism allows to:

- lock the entire project or library
- protect single POUs against unauthorized change
- restrict actions like downloading or starting/stopping PLC

Reference to MULTIPROG help system: Please refer to the topic 'User interface and general project handling/Handling a project/Protecting a project using a password'.

Dialog-based I/O configuration

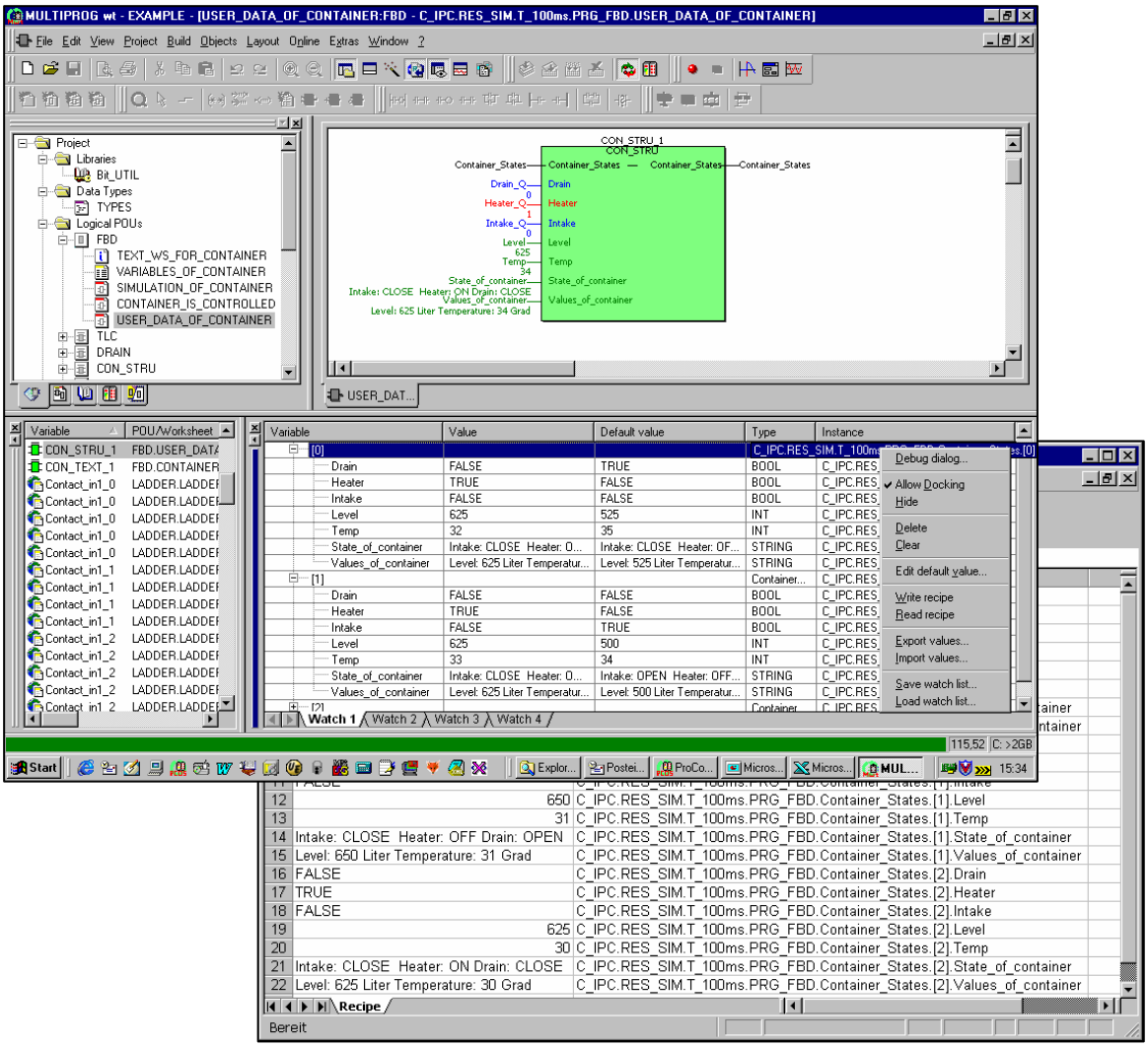
The dialog-based I/O configuration makes it easy to configure I/Os and drivers for ProConOS. Specific drivers can be easily plugged in by an open DLL interface.



Reference to MULTIPROG help system: Please refer to the topic 'PLC help"/"I/O configuration'.

Recipes

The recipe handling allows defining parameter sets which can be downloaded to a PLC in order to reconfigure a machine or production process.



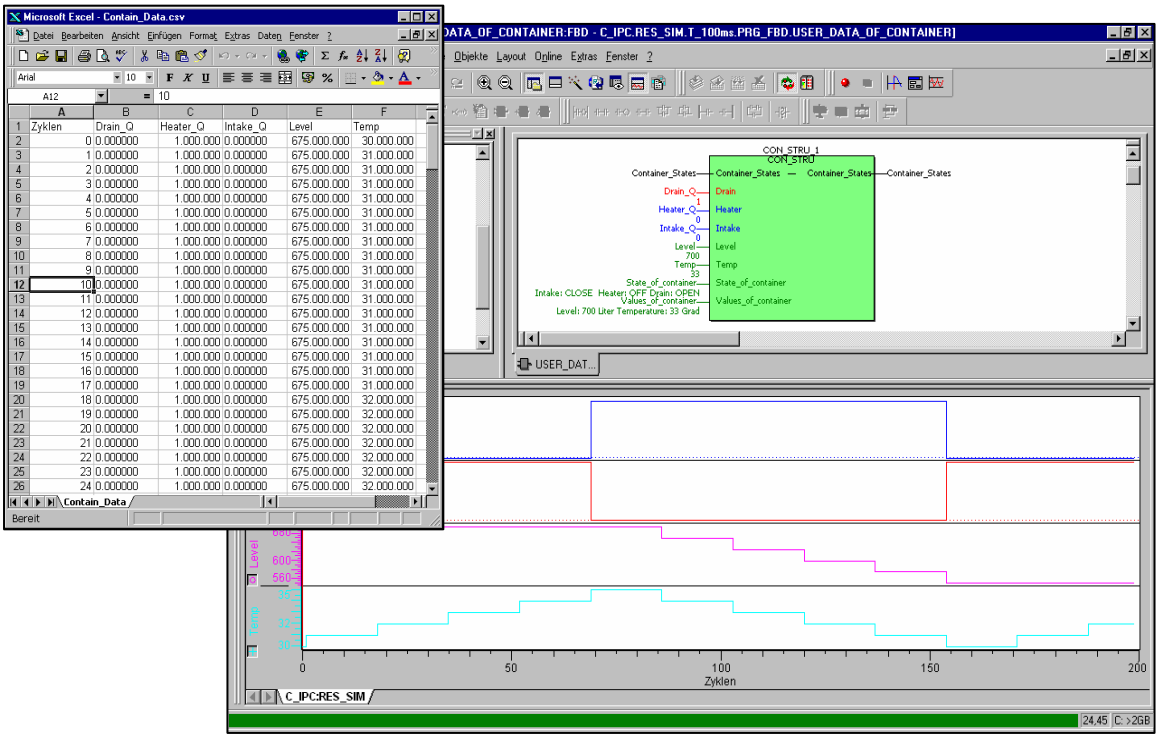
The easy-to-use recipe handling is integrated into the watch window and allows to:

- Overwrite a set of variables with self-defined values
- Read a set of values from the PLC into a recipe
- Load and save recipes from/to a file
- Edit a recipe file with EXCEL or a text editor

Reference to MULTIPROG help system: Please refer to the topic 'PLC help/Watch window/General information about recipe files'.

Saving Logic Analyzer values into a file

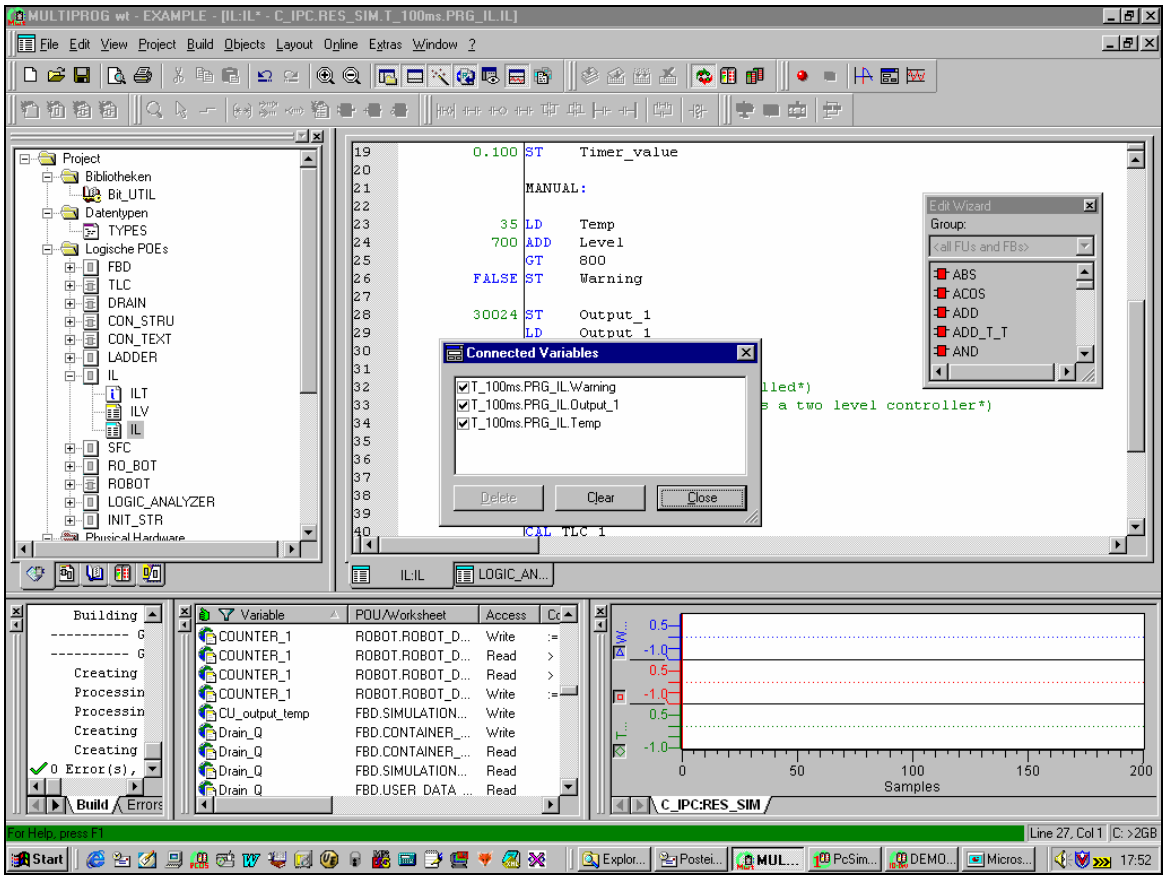
The values recorded by the Logic Analyzer can be stored to a standard CSV file for further processing with EXCEL or your own tool.



Reference to MULTIPROG help system: Please refer to the topic 'PLC help/Logic analyzer/Export logic analyzer data into a *.csv file'.

Enhanced variable selection in the Logic Analyzer

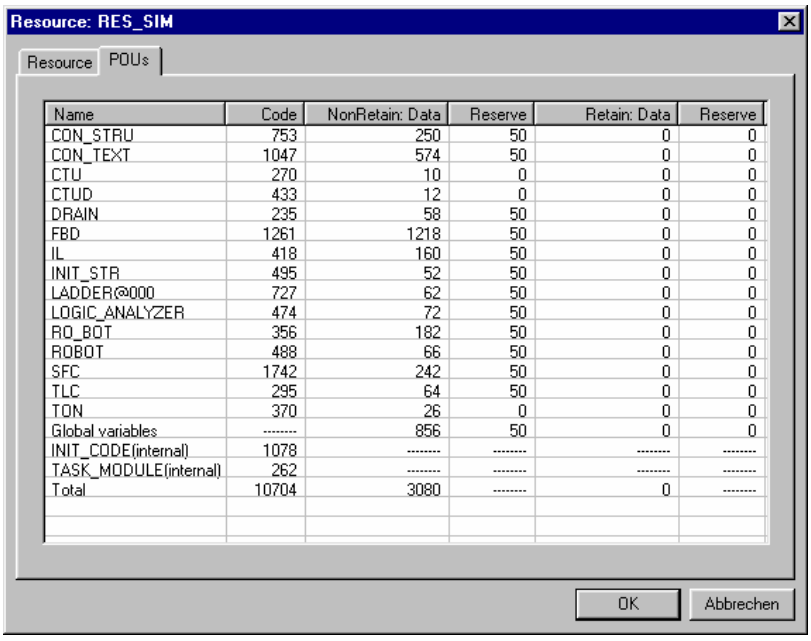
Variables in the Logic Analyzer can be marked for display by setting a checkbox inside the variable list.



Reference to MULTIPROG help system: Please refer to the topic 'PLC help/Logic analyzer/Dialog connected variables'.

Display of ProConOS code size

The code size of POUs loaded into ProConOS can be displayed.



Name	Code	NonRetain: Data	Reserve	Retain: Data	Reserve
CON_STRU	753	250	50	0	0
CON_TEXT	1047	574	50	0	0
CTU	270	10	0	0	0
CTUD	433	12	0	0	0
DRAIN	235	58	50	0	0
FBD	1261	1218	50	0	0
IL	418	160	50	0	0
INIT_STR	495	52	50	0	0
LADDER@000	727	62	50	0	0
LOGIC_ANALYZER	474	72	50	0	0
RO_BOT	356	182	50	0	0
ROBOT	488	66	50	0	0
SFC	1742	242	50	0	0
TLC	295	64	50	0	0
TON	370	26	0	0	0
Global variables	--------	856	50	0	0
INIT_CODE(internal)	1078	--------	--------	--------	--------
TASK_MODULE(internal)	262	--------	--------	--------	--------
Total	10704	3080	--------	0	--------

Reference to MULTIPROG help system: Please refer to the topic 'PLC help/Configuration specific dialogs/Dialog resource *resource_name*'.

Changes in the project tree

The project tree allows to insert elements via the context menu and to edit the new task type DEFAULT.

Reference to MULTIPROG help system: Please refer to the topic 'Editing and developing a project/Defining the project structure in the project tree/General features of the project tree/Inserting objects in the project tree'.

PLCopen X-Reusability Level

Exchange POUs between different programming packages. X-Reusability level also allows data exchange with Siemens STEP 7.

Reference to MULTIPROG help system: Please click on 'File/Export/Export IEC 61131-3 file' or on 'File/Import/Import IEC 61131-3 file'. Currently there is no help available for this MULTIPROG Add-in.

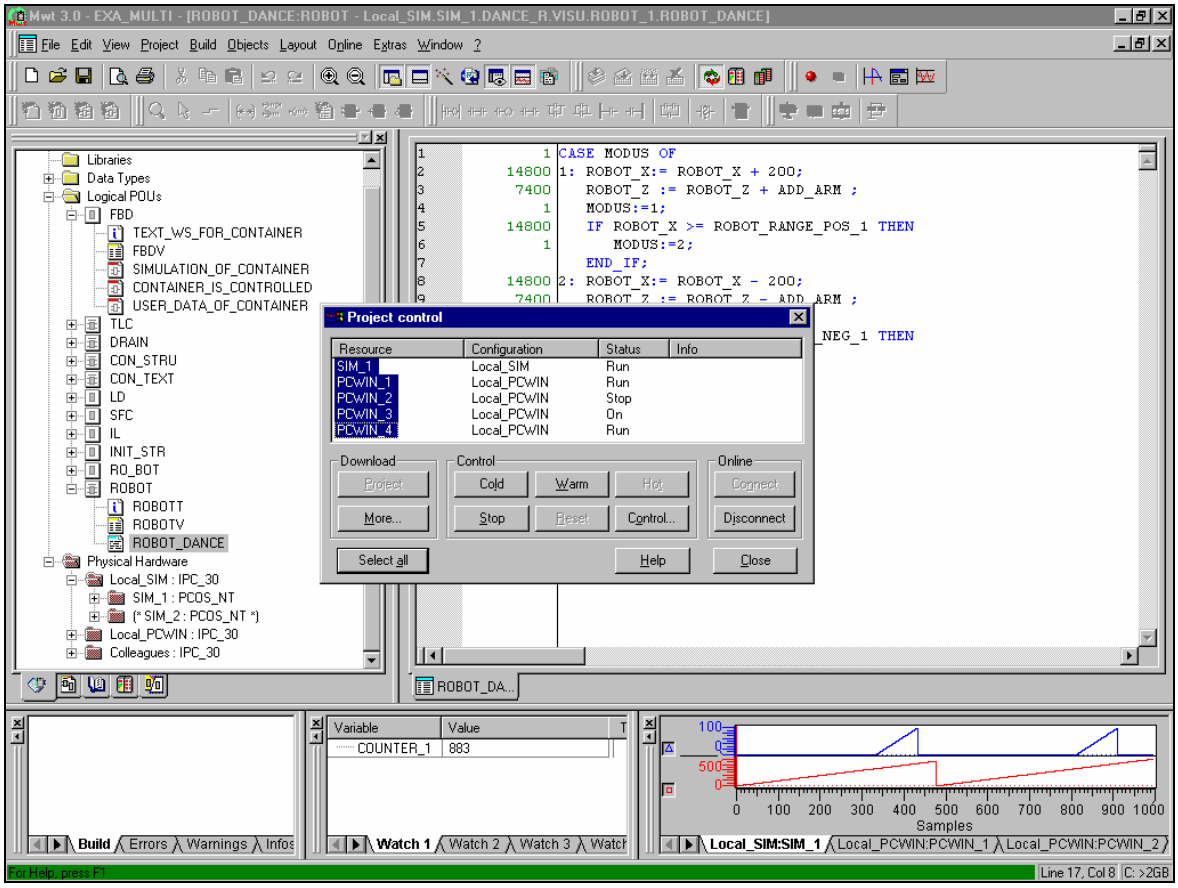
Keywords in lower case

IEC 61131 keywords can be typed in lowercase.

Reference to MULTIPROG help system: Please refer to the topic 'User interface and general project handling/User interface – General description/Customizing the user interface – dialog options'.

Optimized handling of PLC networks

One control dialog allows full control of all the PLCs in a network.



Instead of having one control dialog for each PLC in a network, the new 'Project Control' dialog allows the control of all or a set of PLCs in a network with one command. The Project Control dialog shows the state of all PLCs when they are stopped or running. Any set of PLCs may be started, stopped or a download may be started.

If a fast network like Ethernet is used to connect the PLCs, a download to all PLCs becomes much faster, because each download to each PLC is done by an own Windows-Thread inside MULTIPROG.

Reference to MULTIPROG help system: Please refer to the topics 'PLC Help/Configuration specific dialogs/Dialog Project Control' and 'PLC Help/Downloading – General description/Downloading a project/Downloading a project if two or more resources are available'.

Appendix 1: ProConOS 3.2

Please refer to chapter 22 “ProConOS Changes List” of the ProConOS Developers Manual, since especially the API of the memory registration of shared memory, retain and flag area have been simplified.

EN/ENO for INTEL32 and SH3

Functions can be used with an EN input and an ENO output.