PAScal V1.9.0

▶ Software

General

This document contains important information, which must be noted. This document also contains details of the changes made in the software tool from one version to the next.

System requirements

Operating system:	Windows 7, 8, 8.1, 10 (32 Bit and 64 Bit)
Processor:	Pentium 4, 2 GHz (Dual Core) or desktop equivalent: Pentium 4, 2.4 GHz
RAM:	Min. 2 GB
Available hard drive space:	Approx. 1 GB
To call up online help:	Browser, compatible with HTML 3.2 Recommended: Internet Explorer from Version 5.0, Netscape Navigator from Version 5.0
To display PAScal reports:	Adobe Acrobat Reader, from Version 7

Important information

Installation

▶ Close programs
   Please close all open programs on your PC before installing the software tool.

▶ Network installation
   The software tool cannot be installed on a network drive.

▶ Access rights

   – Write access to the installation directory is required in order to be able to install and start the software tool.

   – The user needs administrator rights for installation under Windows 7 and Windows 8.

▶ **Restart**
   You are prompted to restart your PC after the installation.

Start installation

The software PAScal has to be installed on a hard disk:

1. Switch on your computer and start up the operating system.

2. The software PAScal is in the download area on the Pilz homepage at http://www.pilz.com/support/downloads/

   Download the software PAScal from the download area on the Pilz homepage.

3. Install software PAScal.

   Double-click on the downloaded file. The installer will guide you through the installation.

> **INFORMATION**
>
> To ensure that PAScal functions correctly, the files and directories in the installation directory of PAScal must not be modified manually once installed (e.g. with the Windows Explorer or a text editor).

Generate report

▶ To generate a report in Word format you will need a version of Microsoft Office from at least Office 2003.

▶ Header and footer may not be correctly aligned when a report was created in DOC output format. You will need to manually correct headers and footers.

Component library

▶ Project components for which there is no suitable component library in PAScal are only available within the project. They cannot be added to any component library.

▶ Using older libraries in PAScal Version 1.9.x: Make sure that these libraries are updated for use in Version 1.9.x.

▶ When downloading SISTEMA libraries, make sure that the URL refers directly to the stated library.

▶ The component library for Danfoss products will no longer be supplied with PAScal from Version 1.6.0. The library is available from Danfoss and must be imported into PAScal.

Calculation time

The calculation time for the safety characteristic data depends on the complexity and number of safety functions, e.g. the configured SRCF or SRP/CS. A longer calculation time is to be expected from around 100 SRCF or SRP/CS.

Licencing

▶ The demo version of PAScal is available after installation. The demo version has a restricted function range compared to the full version. To access the full version you first need to license the software.

▶ Limitations of the Demo version

   – only one project can be opened and processed

   – only a max. of 10 SRCF can be edited

   – projects in accordance with EN ISO 13849-1 can be created, opened and edited. projects in accordance with EN/IEC 62061 can only be opened

   – a report can be created but it is marked with a watermark that labels the licence state

   – the report cannot be adapted user-specifically

   – the start screen cannot be hidden

   – no attachments can be added

– no libraries, language libraries, component collections or macros can be exported

– no Excel files from third-party libraries can be imported (use import of ZIP files as in PAScal libraries)

– the import of language libraries is not supported

– components cannot be assigned user-defined names

– projects and libraries can only be saved to the standard directories

– the interface to the software for risk assessment is not supported

– automatic updating of components is not supported

– automatic updating of libraries is not supported

Pilz libraries

Pilz component libraries can be downloaded in PAScal and VDMA format:

▶ In PAScal format

http://www.pilz.com/en-INT/PAScal_Lib

▶ In VDMA format

http://www.pilz.com/en-INT/VDMA_Lib

Known problems

▶ **The"Undo" command**
The "Undo" command is not supported when changes are made in the library tree.

▶ **Installing the product icon in the Quick Launch bar**
When creating program icons in the quick launch bar, the key combinations do not always appear.

▶ **Support for PAScal at command line level**
To support the execution of PAScal at command line level, the PAScal installation directory must be available in the system path variable. In certain operating systems, this path cannot be changed during installation. In this case the user will need to change the path variable manually.

– Call up the system properties (Start -> Control Panel -> Advanced System Settings -> Environment Variables) and change the Path system variable. Enter the installation directory for PAScal in the PATH system variable.

▶ **PAScal projects and component libraries with a Japanese operating system**
When using a Japanese operating system, please note: PAScal projects and component libraries created using PAScal Version 1.1.1 or older cannot be opened.

▶ **User-defined libraries on network drives**
A custom library on a network drive cannot be accessed simultaneously from multiple PAScal sessions.

▶ **Parallel use of PAScal 1.5.2 and PAScal 1.6.x**
If you wish to use PAScal 1.5.2 and PAScal 1.6.x in parallel, open PAScal 1.5.2 first.

▶ **Open PAScal**
Opening PAScal by double-clicking a project does not work for projects that have been saved with at PAScal version <1.6.2.

▸ **Time between two operations is greater than the number of operating hours per day**
When configuring a component for "Operations per time unit", if 1 operation per week or per month is stated (or a corresponding "Time between two operations"), the system uses the value 24 hours for "Operating hours per day", irrespective of what is stated under "Operating hours per day". This is displayed in the configuration dialogue box and the value is published in the report.
However, the value configured in the dialogue box for "Operating hours per day" is retained.

▸ **Managing projects**
If a write-protected project is opened (e.g. ZIP file or file on CD), the user will be informed that he does not have write access to this project.

▸ **Import of component collections from older PAScal versions**

– Component collections from PAScal versions < 1.7.0 cannot be imported in PAScal 1.7.x.

▸ **Migration of PAScal macros**

– If PAScal 1.7.x is being installed, the system will detect an earlier version of PAScal and you will be given the option to uninstall the earlier version. If the user opts to uninstall the earlier version, PAScal will automatically migrate all the libraries and macros.

– If the user opts not to uninstall the earlier version, it is his responsibility to copy these libraries and macros into the directory for libraries in 1.7.x, in order to work with these libraries and macros.

Changes in Version 1.9.0

This version is available in the following languages:

▸ German

▸ English

▸ French

▸ Spanish

▸ Italian

▸ Japanese

New features

▸ Support SISTEMA

PAScal supports SISTEMA Version 2.0.7 during import.

Optimisations

▸ Pilz library
The Pilz component library has been updated. Sample projects and macros have been adapted to the new component library.

▸ Support SISTEMA
The export of SISTEMA libraries is no longer supported.

Changes in Version 1.8.0

This version is available in the following languages:

- German
- English
- French
- Spanish
- Italian
- Japanese

New features

- Support ISO 13849-1:2015
    - PL_r can be reduced by one level when the probability of occurrence of a hazardous event is assessed as low
    - $MTTF_D$ values for components of category 4 are possible up to 2500 years (when applying ISO 13849-1:2015)
    - Expansion of the possible demand modes for single-channel components of category 2
- Support SISTEMA

    PAScal supports SISTEMA Version 1.1.9 during import and export.

Optimisations

- Pilz library

    The Pilz component library has been updated. Sample projects and macros have been adapted to the new component library.
- ISO library 13849-1

    The library supplied has been supplemented by further components.

Changes in Version 1.7.3

This version is available in the following languages:

- German
- English
- French
- Spanish
- Italian
- Japanese

Changes in Version 1.7.2

This version is available in the following languages:

- German
- English

New functions

▸ Check the library's validity:

Libraries can be checked to ensure they comply with certain specifications.

– Check in accordance with VDMA standard:

Libraries that the user has edited or created are checked for compliance with the VDMA standard.

– Check PAScal format:

Libraries that the user has edited or created are checked for compliance with the internal PAScal format.

▸ Import and export libraries in PAScal format

– Import libraries in PAScal format

New and old versions of a PAScal library can be imported in ZIP format.

– Export libraries in PAScal format

Editable libraries can be exported in PAScal format. The format used during export is not compatible with old versions of PAScal and the libraries cannot be imported into old versions of PAScal.

Optimisations

▸ Copy, cut and paste library contents

It is not possible to copy, cut and paste content from a write-protected library. This prevents violations of copyright.

▸ Icons in the library view

PAScal and VDMA libraries are labelled with different icons to make it easier to distinguish between them.

▸ Manual entry of diagnostic coverage and category

The diagnostic coverage and category of a subsystem can also be entered manually for device types 2 and 3.

Changes in Version 1.7.1

This version is available in the following languages:

▸ German

▸ English

▸ French

▸ Spanish

▸ Italian

▸ Japanese

Changes in Version 1.7.0

This version is available in the following languages:

▸ German

▶ English

New features

▶ VDMA standard sheet 66413

– The specifications for the structure of components, component libraries and language libraries are fully supported during import and export.

– Adapting the calculations to the amended specifications in VDMA standard sheet 66413.

▶ Risk assessment software

Risk assessment software (= RA software) is supported. Projects can be opened in PAScal from the RA software and projects that have been amended in PAScal can be further processed in the RA software.

▶ Manual entry of DC and category

The diagnostic coverage and category for a subsystem can also be entered manually.

Optimisations

▶ Searching elements in libraries
A quick search has been added for searching in library view.

▶ Library selection
Unused libraries can be excluded from the library view via the "Select Library" dialogue box.

▶ Structure and layout of the report

– Layout of the report has been improved, e.g. rounding, word wrap,

– Report structure has been improved.

▶ Management and administration of the PAScal licences has been improved.

▶ Improvements to upgrade process
Upgrade process has been improved to avoid errors in existing projects from previous versions of PAScal

Changes in Version 1.6.3

This version is available in the following languages:

▶ German

▶ English

▶ French

▶ Spanish

▶ Italian

▶ Japanese

Optimisations

▶ Pilz library
The Pilz component library has been updated. Sample projects and macros have been adapted to the new component library.

▶ Use of macros
When a component is changed it may happen that the software no longer detects the component when using a macro. (e. g. when the component is deleted and then created again). In such cases the affected component is omitted when the macro is used.

Changes in Version 1.6.2

This version is available in the following languages:

▶ German
▶ English
▶ French
▶ Spanish
▶ Italian
▶ Japanese

Optimisations

▶ **Use of macros**
Macros can also be used in projects when components of these macros do not occur in the library.

▶ **Search function**
The search function in the library is now in the main menu and in the Edit menu.

▶ **Component configuration**
The dialogue box for component configuration for which the number of operations has to be calculated, has been improved.

New features

▶ **Installation of PAScal**
For installing PAScal under Windows administrator rights are required, however, this is not required for the application of PAScal.

▶ **Calculation of characteristic values**
Safety-related characteristics can also be calculated in accordance with EN ISO 13849-1:2006 + COR:2009 + EN ISO 13849-2:2012 and EN ISO 13849-1:2006 + COR:2009 + EN ISO 13849-2:2003 .

Changes in Version 1.6.1

Optimisations

In this version a series of improvements of usability has been made:

▶ Zoom selection box available in the workspace
▶ Delete process has been optimised
▶ The Undo function with macros and collections is supported
▶ Process of overwriting and renaming files has been optimised
▶ Selection for calculating the target level has been optimised

Changes in Version 1.6.0

New features

▸ **Component collections**

   – Components in the component library can be arranged into component collections.

   – Component collections are managed within their own folder structure.

   – An import and export function is available for exchanging component collections between different PAScal installations.

▸ **Macros**

   – Parts of an SRFC or SRP/CS can be combined into macros, which can be reused repeatedly.

   – Macros are created, managed and available for reuse in the macro library. An import and export function is available for exchanging macros between different PAScal installations.

Optimisations

Improved user interface

▸ Windows can be moved anywhere

▸ Zoom factor in the SRP/CS and SRCF Editor

▸ Improved navigation

Changes in Version 1.5.2

This version is available in the following languages:

▸ German

▸ English

▸ French

▸ Spanish

▸ Italian

▸ Japanese

Changes in Version 1.5.1

New features

▸ **Import of SISTEMA libraries to PAScal**

   – PAScal-supported when importing the following SISTEMA versions: 1.0.5, 1.1.0, 1.1.0b, 1.1.1 and 1.1.2.

▸ **Export of PAScal libraries to SISTEMA**

   – PAScal libraries can be exported to the SISTEMA version 1.1.2.

▶ **Organise SISTEMA components into groups**

    – Components from SISTEMA libraries can be reorganised in PAScal. Components can be combined and new component types and subsystems can be assigned.

▶ **Order numbers and versions**

    – The order numbers and versions of the components are now displayed in the table with the properties.
The user can also browse the library for such components.

Changes in Version 1.5.0

New functions

Importing SISTEMA libraries

▶ SISTEMA libraries can be imported. SISTEMA is a software assistant for assessing the safety of control systems in line with EN ISO 13849-1. SISTEMA is produced by the Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA).

▶ Libraries from Version 1.1.1 of SISTEMA are supported.

Optimisations

Configure components in subsystems

▶ Components are differentiated by

    – Version

    Hardware or software version

    – Operating mode

    Component properties that are suitable and approved for certain safety-related applications (e.g. single-channel, dual-channel, light beam device)

Configure custom components

▶ Components are classified into types

    – MTTFd

    Components that are not subject to mechanical wear and tear (e.g. optical sensors) and do not have internal diagnostics

    – B10d

    Components that are subject to mechanical wear and tear (e.g. mechanical sensors) and do not have internal diagnostics

    – SILCL, PL

    Components that have internal diagnostics

    – Fault exclusion

    Components that ought to be considered, but based on corresponding evidence, it may be assumed that they do not contribute to the safety function's failure mode.

- New safety characteristic data

  λ_d / λ – Ratio of dangerous failures to overall failures

Changes in Version 1.4.2

Optimisations

- The display of subsystem properties and component data in the report has been improved.

Changes in Version 1.4.1

Optimisations

- In the PFH_D calculation sheet, the category is now shown correctly (Catagory 3 rather than Category 4, as previously), if DCavg = high and MTTFd = low or medium.

Changes in Version 1.4.0

New functions

- There is a new output format for the project report.
- Attachments may be added to the project.
- PAScal libraries can now be updated online.
- The libraries have a new search function.

Changes in Version 1.3.2

Optimisations

- Components with "Demand mode <= 1/100 test rate (Category 2)" are now handled correctly when earlier versions are imported.
- Selection of a predefined SRCF template no longer prevents an SRCF being created.
- Component symbols are no longer damaged when importing earlier projects.

Changes in Version 1.3.0 and 1.3.1

New functions

- SRCF Editor and Calculation Graph can be displaced in a split window
- Mixed subsystems can be configured in projects in accordance with EN ISO 13849-1. Mixed subsystems combine components of various subsystem types.
- The component libraries are updated
- Improvements on calculation of number of operations
- There is enhanced help on how to use custom libraries

▶ There are PDF reports for sample projects are available

Changes in Version 1.2.3

New functions

▶ The component library has been updated. Always use the current libraries! Compare the status of the supplied libraries with the status of the libraries in the Internet: http://www.pilz.com

Changes in Version 1.2.0, 1.2.1 and 1.2.2

New functions

▶ Supports components of 3rd party manufacturers in the component library

▶ User can edit multiple projects in one application

▶ Windows Vista support

▶ Advanced navigation in the component library window

▶ Context-sensitive help

▶ Advanced configuration of bus connection

▶ Advanced user preferences

▶ New calculation sheet acc. to EN ISO 13849-1

Optimisations

▶ The user can start a PAScal by double-clicking a project file and opening the project.

▶ Support

Technical support is available from Pilz round the clock.

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