Performance Description

Contents: Programming Interface 2022
Status: 01/2022

efficient engineering.

Performance Description
Contents: Programming Interface 2022
Last update: 01/2022

FRIEDHELM **LOH** GROUP

EPLAN makes an import function available which uses ECLASS. The use of the ECLASS standard is subject to a license and requires registration and downloading in the download portal: http://www.eclassdownload.com

EPLAN uses the dotNetRDF © library: http://www.dotnetrdf.org, Copyright (c) 2009-2013 dotNetRDF Project (dotnetrdf-develop@lists.sf.net). The source code is subject to the MIT license: https://open-source.org/licenses/MIT

EPLAN uses Google Chromium ©. https://www.chromium.org, Copyright © 2015 The Chromium Authors. The source code is subject to the BSD license.

EPLAN uses the Chromium Embedded Framework ©. https://bitbucket.org/chromiumembedded/cef, Copyright © 2008-2020 Marshall A. Greenblatt. Portions Copyright © 2006-2009 Google Inc. The source code is subject to the BSD license.

EPLAN uses CEFSharp ©. https://cefsharp.github.io, Copyright © The CefSharp Authors. The source code is subject to the BSD license.

EPLAN uses Microsoft Unity ©. https://github.com/unitycontainer/unity, Copyright © Microsoft. The source code is subject to the Apache license, Version 2.0.

This application incorporates Open Design Alliance software pursuant to a license agreement with Open Design Alliance. Open Design Alliance Copyright © 2002–2020 by Open Design Alliance. All rights reserved.

EPLAN uses the PDFlib library, Version 9.2.0, Copyright © by PDFlib GmbH. Copyright reserved.

EPLAN uses the PLOP library, Version 5.3p1, Copyright © by PDFlib GmbH. All rights reserved.

The license management portion of this Licensee Application is based upon one or more of the following copyrights: Sentinel® RMS, © 2005 SafeNet, Inc., all rights reserved, and Sentinel® EMS, © 2009 SafeNet, Inc., all rights reserved. Sentinel® is a registered trademark of SafeNet, Inc.

EPLAN uses the the Open Source software QR Code generator library. https://www.nayuki.io/page/qr-code-generator-library, Copyright © by Project Nayuki. The source code is subject to the MIT License.

The complete license texts for the Open Source licenses mentioned above are available in the following file (for on-premises programs):
<Installation directory>\bin\License.txt

The complete license texts for ePULSE applications and services are available at the following link:
https://goto.epulse.com/ePULSELicTxt

Table of Contents

The described functionalities are only available for certain module packages.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

Introduction

EPLAN offers Engineering software and service in the fields of electrical engineering, automation and mechatronics. The company develops one of the world's leading software solutions for engineering, plant engineering and enclosure design. EPLAN is also the ideal partner for simplifying challenging engineering processes.

Standardized and individual ERP and PLM/PDM interfaces ensure consistent data along the entire value chain. Working with EPLAN means unrestricted communication across all engineering disciplines. Whether small or large companies: Customers can use their expertise more efficiently. EPLAN aims to keep growing with its customers and partners and furthers integration and automation in engineering. "Efficient Engineering" is our motto.

EPLAN was founded in 1984 and is part of the Friedhelm Loh Group.

The described functionalities are only available for certain module packages.

All from one provider: EPLAN Solutions

EPLAN supports you with establishing your engineering across multiple disciplines. The basis is formed by the EPLAN platform that interconnects our software solutions. For you this means a clear increase in efficiency when it comes to working on your EPLAN project. Since your digital data flow seamlessly from solution to solution and are enriched further in every process step. The Cloud products of EPLAN offer added values for collaboration in teams - in particular for tasks across all your locations.

Together the EPLAN Platform and the supplementary Cloud applications form EPLAN Solutions - or, in other words: the key for your future-oriented engineering.

EPLAN offers a comprehensive framework for your daily work. This way interfaces allow the bidirectional exchange with ERP and PDM systems. With the connection to mechatronic processes you expand your view to a mechatronical engineering perspective. With neutral interfaces you can transfer the EPLAN project data into other software environments and continue working on them.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

Extensions and modules for all cases

No matter to what extent you are already working with EPLAN solutions in your company and which requirements have to be fulfilled in the future: Extensions in all directions can be implemented easily thanks to the add-on concept of EPLAN - flexibly and individually for your tasks.

To this purpose EPLAN offers comprehensive extension options through extension modules and in the form of service packages - the "Elements".

You can find a comprehensive overview of the current extension modules in the licensing overview. Should you have any further questions on this topic, please do not hesitate to ask your EPLAN contact person.

EPLAN Electric P8

With EPLAN Electric P8 you configure your electrical design for machines and plants in an engineering system consistently, coherently and quickly. The software supports diverse engineering methods: from manual creation to standardized and template-based work. EPLAN Electric P8 automatically creates detailed reports for you as an integral part of the project documentation - if desired continuously or bundled after project completion. This way you supply the downstream process steps with all required information from the engineering process.

EPLAN Fluid

EPLAN Fluid is your engineering tool, especially for the configuration and automated documentation of circuits of fluid-power plants in the fields of hydraulics, pneumatics, cooling and lubrication.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

EPLAN Preplanning

EPLAN Preplanning allows you to already acquire engineering data in the pre-planning phase. This, for example, includes the actuators and sensors of a plant, machine or a building. You can import data both from external tabular sources as well as plant and machine overviews and furthermore graphically acquire process and instrumentation diagrams. You can also access data that have been collected and enriched in EPLAN Preplanning for downstream planning phases in the engineering.

EPLAN Pro Panel

With EPLAN Pro Panel Professional you conceive and design control system enclosures, switchgear and power distribution systems for the energy supply in 3D. This way you can solve diverse engineering tasks in one software: from the electrical schematic creation through the planning of the mounting layout in 3D to the virtual routing of connections. A variety of data and information for the manufacturing are provided in an automated way - from the component labeling to the support of manual wiring processes.

EPLAN Smart Wiring

EPLAN Smart Wiring is your virtual assistant for manual wiring in the enclosure production. From the connecting point to the exact routing track, the software provides you - as the wirer - with all the required information in digital form - if necessary, also in 3D. You can note the status of the wiring with the traffic light principle. If you need to reassure yourself, you can call up the electrical schematic and counter-check it - on the basis of each individual connection. The provision of the project data on a central server makes it possible to manufacture many identical enclosures in parallel or work together with several wirers.

The described functionalities are only available for certain module packages.

FRIEDHELM **LOH** GROUP

EPLAN Harness proD

Use EPLAN Harness proD for the efficient design and documentation of cables and wire harnesses. With the software you digitize the typical work processes in cable and wire harness design: From the importing of the connection information as well as the 3D panel layout from the EPLAN Platform through the intuitive routing up to the creation of manufacturing documentation. The software is open for MCAD systems and can in this way be seamlessly integrated into existing system landscapes.

EPLAN Cogineer

With EPLAN Cogineer you gain the full potential from your engineering in a short time as well as increase the quality of your electrical and fluid-power documentation. You use the switching templates you have already created to structure a macro library and with EPLAN Cogineer realize the automatic schematic creation at the push of a button. Profit from the innovative methods with added value in engineering without long implementation - in all industries and in companies of all sizes.

EPLAN Engineering Configuration (EEC)

With EPLAN Engineering Configuration (EEC) you illustrate your product portfolio in a modular system with interdisciplinary function units. On this stable basis, EEC becomes your tool for the design and application of configuration user interfaces as well as the automated creation of documentations. The interdisciplinary working method integrates sales, order processing, mechanical engineering, electrical engineering and control technology as well as production and documentation.

The described functionalities are only available for certain module packages.

FRIEDHELM *L O H* GROUP

EPLAN ERP/PDM Integration Suite

Continuous data flows ensure transparency in the product development process. Through the EPLAN Integration Suite, EPLAN manages the integration into existing ERP, PDM and PLM system landscapes. You can optimize your work processes from the schematic through to the master data. The quick and individual provision of the data takes place in bidirectional exchange with the systems, without you having to leave the work environment within the EPLAN platform.

EPLAN eVIEW Free

EPLAN eVIEW Free lets you implement engineering review processes digitally. This free software allows structured collaboration with co-workers, customers and service providers. It enables you to view and comment on changes to a project through redlining workflows by using a browser and irrespective of your location.

EPLAN eBUILD Free

New methodology for your engineering process: With EPLAN eBUILD Free you have the possibility to compile schematics from template libraries with a few clicks. Registered users have this application automatically available as a free service. eBUILD Free offers you predefined libraries and a configurator that allows you to create parts of schematic projects in EPLAN practically at the click of a button.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

EPLAN eBUILD

With EPLAN eBUILD you create your own template libraries which can be re-used by employees and colleagues within the EPLAN Cloud environment. This way you can automatically create schematics in EPLAN across the company. eBUILD is composed of two functional areas which are available to you completely in the full version: In Designer experienced users create their own template libraries on the basis of the EPLAN macro technology. In Project Builder they can then be used repeatedly at any time to compile elements of schematics which are frequently used in day-to-day work with a few clicks.

EPLAN Data Portal

With the EPLAN Data Portal you have direct online access to high-quality product catalogs from a continuously growing pool of notable component manufacturers. All the solutions anchored in the EPLAN platform access this Web service equally. Simple transfer of the offered components into the EPLAN documentation reduces the required configuration work and increases the quality of the machine and plant documentation. With its Data Standard based on ECLASS Advanced, EPLAN Data Portal provides a systematic framework for device attributes.

EPLAN eMANAGE Free

EPLAN eMANAGE Free is your Cloud application for collaborations across all your projects and locations with colleagues, partners, suppliers and clients. eMANAGE enables you to share EPLAN projects with selected project partners across all teams and across the company in a protected Cloud environment. The solution enables simple uploading of projects from the EPLAN Platform or via web browser.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

EPLAN eMANAGE

Beyond the functions of the free version, the full version of EPLAN eMANAGE offers you practical, functional extensions as well as additional storage for your data. Share project data via eMANAGE at an extended scope - with familiar access control and the same ease of use. Make your master data available with eMANAGE from the EPLAN Platform 2022 and thus make their usage easier for other users. With a click you make current EPLAN projects available in earlier Platform versions as well. This way you allow project partners who do not yet use the current EPLAN version access to the project data you provided in the Cloud.

Note:

The properties and functionalities specified in this performance description are based on the maximum scope of performance of the product including all extension modules, Elements and add-ons. Extension modules, Elements and add-ons are available optionally and separately and as a rule cost an additional fee. For further details of the available product variants please refer to the "Licensing Overview" chapter.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

EPLAN API

EPLAN API Advantages

A unified, and especially high-performance, programming interface (API, Application Programming Interface) is available for the products EPLAN Electric P8, EPLAN Fluid, EPLAN Pro Panel and EPLAN Preplanning.

The programming interface is based on Microsoft's current ".Net 4.5.2" technology and thus offers an open, future-proof and high-performance development platform.

Develop your own customized engineering solutions yourself or in cooperation with EPLAN on the basis of the EPLAN API.

Functional Improvements in Performance

The EPLAN API offers you an efficient possibility to implement individual functionalities in your own company on the basis of the EPLAN Platform and thus to further increase the workflow and system integration. As a key component in engineering EPLAN provides highly efficient project editing highly rationalized through automatisms through individual customizing to your special tasks.

Providers of interfaces and engineering solutions in the EPLAN environment can open up additional market opportunities through the creative implementation of own application ideas on the basis of the EPLAN API.

The described functionalities are only available for certain module packages.

FRIEDHELM *L O H* GROUP

Faster Task-based Processes

The EPLAN API allows you to automate standardized work processes in engineering. The standard scope of performance of the EPLAN products can furthermore be extended with individual functionalities. Meaning that EPLAN can easily be adapted to your individual working methods. Using of the comprehensive solution is simplified for the individual user thanks to the automation and individualization. Throughput times, planning errors and familiarization periods can be reduced.

Users of other programs in the EPLAN environment can use EPLAN functionalities and data through remote access via EPLAN API programming without having to leave their original working environment. This allows consistent data flow between all applications involved in engineering.

Results are thus available faster and at lower costs overall.

EPLAN API Technology

The following chapters help software developers in assessing the performance capabilities of the EPLAN API for their companies.

In general only a simple text editor and a free ".Net" compiler are required for the programming. For development support, we recommend an integrated development environment such as Microsoft Visual Studio that is supported by the EPLAN API.

Languages supported by ".Net", such as C# or Visual Basic and C++/CLI can be used as programming languages.

The EPLAN API can be used to write both extension modules that run within the EPLAN system as well as stand-alone programs.

The described functionalities are only available for certain module packages.

Extension Modules

The creation of extension modules allows you to create new functionalities and to integrate these seamlessly into the user interface. The integration of own menu items and dialogs into the EPLAN applications thus becomes possible.

Extension modules are ".Net" assemblies that only have to be registered once and are then available at each start of EPLAN.

Stand-alone Programs

EPLAN API makes the use of EPLAN functionalities in own programs possible. These "off-line applications" allow a multitude of individual tools to be programmed with which special requirements can be covered.

Through interaction with prepared schematic macros and partial schematics it is possible, for example, to create complex schematic generators that can assemble EPLAN schematics automatically. The configuration and workflow can be customized individually and company-specifically.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

EPLAN API Frameworks

From a technical point of view EPLAN API is structured into various sections that entail a separate programming environment (EPLAN API Framework).

Depending on the respective task an EPLAN API program can use the "Object model", "Basic functionalities" or "Advanced functionalities" sections.

EPLAN API Object Model

The EPLAN API object model allows the direct editing of electrical engineering and fluid power components.

To this purpose the EPLAN API provides an object-oriented model that accesses the various components and further project data directly.

A multitude of object classes exist in the EPLAN API data model that allow almost any aspect of a project to be detected and its properties to be accessed, read out and modified.

For example, projects, pages and functions up to complete 3D panel layouts can be generated, edited and deleted by this means. The function overview at the end of this performance description provides an overview of the EPLAN API object model.

EPLAN API Basic Functionalities

Mechanisms that are required in all EPLAN product variants are available as basic functionalities of the EPLAN API.

Basic functionalities of the EPLAN API allow for example the reading out and setting of settings or the entering of texts in the system messages, the editing of multilingual properties or the consideration of the rights management integrated in EPLAN.

The function overview at the end of this performance description provides an overview of the EPLAN API basic functionalities.

The described functionalities are only available for certain module packages.

FRIEDHELM **LOH** GROUP

Advanced EPLAN API Functionalities

In addition to the basic functionalities EPLAN API offers so-called advanced functionalities from the fields of EPLAN Electric P8, EPLAN Fluid, EPLAN Pro Panel and EPLAN Preplanning.

Some examples of advanced EPLAN API functionalities:

Macros can be inserted automatically or individual components be placed in the schematic. Reports can be updated, projects or individual pages can be output to printers or be exported to PDF format.

It is possible to start check runs and report their results. Some check runs can be extended and new messages written to the message management.

Functionalities are available for many different types of project data such as parts, PLC, cables, etc. It is also possible to access data backup functions or labeling module functions.

The function overview at the end of this performance description provides an overview of the advanced EPLAN API functionalities.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

EPLAN API Development Environment

Software developers are supported optimally by the EPLAN API. The programming interface is supplied as a separate setup and integrates the EPLAN API into the development environment of Microsoft Visual Studio.

The integration into the development environment encompasses a context-sensitive Help and various project and class wizards.

The creation of an add-on is demonstrated in step-for-step instructions in the supplied User Guide.

The Help and User Guide are available in English online.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

Overview of Functions

The following function overview provides an overview of the possibilities offered by the EPLAN API.

EPLAN API Object Model

Object model with real derivation hierarchy	✓
Opening, closing, copying, deleting, etc. of projects	✓
Editing project data	✓
Typified querying and setting of properties	✓
Determining of property attributes: Type, designation and access mode	✓
Creation of user-defined properties	✓
Importing and exporting of user-defined properties	✓
Definition of own Undo steps	✓
Integration into the Undo management of the user interface	✓
Editing of project settings	✓
Filtered access to pages	✓
Generating and editing of projects	✓
Generating and editing of pages	✓
Generating and editing electrical engineering and fluid power functions	✓
Powerful search functions for data model objects	✓
Filtered access to the objects placed on pages	✓
Reading out of special macro properties such as the insertion point or placeholder before the macro placement	✓
Placing of symbols	✓
Access to stored symbols and symbol variants	✓
Access to stored parts	✓
Assignment of parts to functions	✓

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

Generating and editing of black boxes	✓
Generating and editing of structure boxes	✓
Generating and editing of macro boxes	✓
Generating and editing of cable definitions and shields	✓
Generating and editing of PLC boxes	✓
Generating and editing of plugs and pins	✓
Generating and editing of terminal strips, terminals and terminal accessories	✓
Generating and editing of groups of placements	✓
Generating and editing of groups	✓
Generating and editing of graphical objects	✓
Access to logic through function templates	✓
Editing of connection properties	✓
Editing of dynamic connection lines	✓
Editing of connection properties via connection definition points	✓
Generating and editing of interruption points	✓
Generating and editing of bundle connection points and bundle connectors	✓
Generating and editing of potential definitions	✓
Generating and editing of connection points of functions	✓
Generating and editing of placeholder texts	✓
Access to the layer management and all graphics layers	✓
Generating and editing of hyperlinks and images	✓
Generating and editing of path function texts	✓
Generating and editing of placed properties	✓
Generating and editing of placeholder objects, variables and value sets	✓
Editing of project options	✓
Generating and editing of all elements of 3D panel layouts	✓
Generating and editing of topology routing tracks	✓
Generating and editing of all pre-planning segments	✓
Access to subprojects	✓

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

Generating and editing of wire harness objects	✓
Generating and editing of piping definitions points	✓

EPLAN API Basic Functionalities

Providing and executing of parameterized actions	✓
Executing of command line calls in the EPLAN API	✓
Inclusion of extension modules	✓
Generating of own menu items	✓
Generating of own toolbars	✓
Reacting to system events	✓
Providing of own system events	✓
Reading out of system message lists	✓
Reading out of the message management	✓
Depending on the use of the rights management: Checking of the rights for actions	✓
Multiuser functionality	✓
Determining of the current user	✓
Adding of own user rights for own extension modules	✓
Editing of multilingual properties	✓
Reading, writing and creating of settings	✓
Access to schemes for advanced functions	✓
Controlling of the progress display	✓
Inclusion of a progress display in independent programs	✓
Seamless integration of new export and import formats	✓
Writing of external programs on the basis of the application object	✓

The described functionalities are only available for certain module packages.

FRIEDHELM **LOH** GROUP

Advanced EPLAN API Functionalities

Archiving and packing of projects	✓
Archiving and packing of master data	✓
Restoring of projects from archives	✓
Restoring of master data from archives	✓
Automatic cable selection	✓
Cable numbering	✓
Executing of check runs	✓
Editing of connection definition points	✓
Generating of devices	✓
Exporting and importing of device lists	✓
Displaying of graphics in own dialogs	✓
Opening of project pages and marking of placements or positions	✓
Importing and exporting the property arrangements of a project	✓
Exporting into different image file formats, DXF / DWG, PXF, PDF	✓
Importing of DXF / DWG	✓
Reporting projects	✓
Updating reports	✓
Inserting embedded reports	✓
Inserting of model views	✓
Automatic reporting of model views	✓
Automatic reporting of drilling patterns	✓
Automatic reporting of copper unfolds	✓
Inserting of macros	✓
Controlling of the labeling module, generating of lists	✓
Storing, updating, filing off of master data	✓
Mounting panel services, e.g. reorganizing of legend numbers	✓
Access to the parts management	✓

The described functionalities are only available for certain module packages.

Storing of parts into a project	✓
Updating parts via the EPLAN Data Portal	✓
Deleting stored part properties	✓
Exporting and importing of bills of materials	✓
Adding of objects to placeholders, assigning of value sets	✓
Importing and exporting of PLC assignment lists	✓
Printing of projects and pages	✓
Access to print settings	✓
Publishing projects	✓
Importing PDF comments into a project	✓
Compressing and reorganization of projects	✓
Correcting projects	✓
Reading in of project header data	✓
Numbering of devices	✓
Numbering of bill of materials items	✓
Numbering of devices with PLC data	✓
Updating connections	✓
Tracking potentials and signals	✓
Revision control	✓
Generating of comparison projects	✓
Comparing of projects	✓
Reading out of the project comparison results	✓
Completing of pages and projects	✓
Creating of revisions of projects	✓
Reading and adding of entries in search lists	✓
Determining of selected objects	✓
Translating projects	✓
Exporting of missing-word lists	✓
Editing of the translation database	✓

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

Adding of messages to message management	✓
Integrating of own check runs and messages	✓
Adding to symbol libraries	✓
Importing and exporting of pre-planning data	✓
PCT loop numbering	✓
Update detailed planning	✓
Automatic routing of topology connections	✓
Exporting of layout spaces to STEP or VRML	✓
Interpreting device logic	✓
Exporting of drilling pattern data for NC machines	✓
Export of wire fabrication data	✓

(Errors and changes reserved.)

The described functionalities are only available for certain module packages.

Hardware Requirements

Workstation

The computer platform is a PC with an Intel Core i5, i7, i9 or compatible processor. Rather select a high-speed computer with less CPU cores than a slower computer with more CPU cores.

Recommended Workstation Configuration

Processor:	Multicore CPU, not older than three years
RAM:	16 GB
Hard disk:	500 GB
Monitor / graphics resolution:	2-screen solution with a resolution of at least 1280 x 1024 recommended 1920 x 1080
3D display:	Graphics card from ATI or Nvidia with the latest OpenGL driver

Network

We recommend using a Microsoft Windows network.

Net transfer rate of the server:	1 Gbits/s
Net transfer rate of the client computer:	100 Mbits/s
Recommended latency	< 1 ms

Multi-user

With regard to minimum requirements for multi-user operation, please contact EPLAN Support. We can advise you specifically according to your individual requirements.

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

Software Approvals

In the current Version 2022 the programs of the EPLAN platform are available as a 64-bit version.

Operating Systems

The EPLAN Platform supports the 64-bit variants of the Microsoft operating systems Windows 10.
The EPLAN user interface language installed must be supported by the operating system.
The Microsoft .NET framework 4.7.2 is required to operate the EPLAN platform.

The program is identified by EPLAN as compatible in accordance with the requirements specified in this performance description on the following operating systems:

Workstation

- Microsoft Windows 10 (64-bit) Pro, Enterprise
  Version 1809, 1903, 1909, 2004, 20H2

Server

- Microsoft Windows Server 2012 R2 (64 bit)

- Microsoft Windows Server 2016 (64 bit)

- Microsoft Windows Server 2019 (64 bit)

Citrix-Server

- Terminal-Server with Citrix XenApp 7.15 and Citrix Desktop 7.15

The described functionalities are only available for certain module packages.

FRIEDHELM **L O H** GROUP

Microsoft Office Products

Prerequisite for the creation of Microsoft Office file formats from EPLAN is that an executable MS Office version that is identified by EPLAN as compatible in accordance with the requirements specified in this performance description is installed on the computer.

- Microsoft Office 2016 (64 bit)*
- Microsoft Office 2019 (64 bit)*

*Please observe the notes in the information portal (www.eplan.help).

SQL Server (64-bit)

- Microsoft SQL Server 2016
- Microsoft SQL Server 2017
- Microsoft SQL Server 2019

PDF Redlining

- Adobe Reader Version XI
- Adobe Acrobat Version XI Standard / Pro
- Adobe Reader Version DC
- Adobe Acrobat Version DC Standard / Pro

The described functionalities are only available for certain module packages.