USER MANUAL

LONGO Programmable Controller
Smarteh IDE

Version 2

SMARTEH d.o.o. / Poljubinj 114 / 5220 Tolmin / Slovenia / Tel.: +386(0)5 388 44 00 / e-mail: info@smarteh.si / www.smarteh.si

Written by SMARTEH d.o.o.

User manual
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LONGO Programmable Controller Smarteh IDE

1 ABOUT THIS DOCUMENT

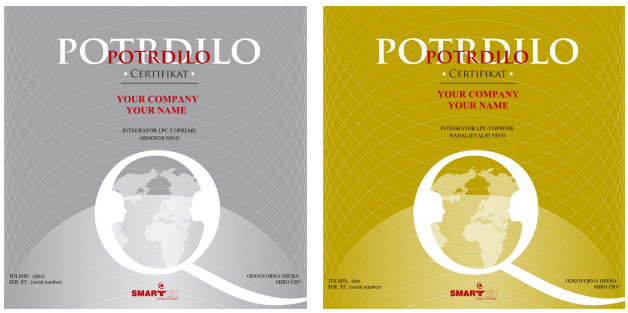
Smarteh IDE user manual describe how to use application *Smarteh IDE*.

1.1 Who Should Read This Document

You should read this document if you are new to *Smarteh IDE* software and want to get started with it or upgrading from previous versions.

In order to properly understand this document, it is necessary to understand at least basics of the *LPC* hardware. For this it is highly recommended to go through the proper training to a certified SMARTEH d.o.o. trainer. On this short course you will learn all the basics and have the opportunity to become a certified SMARTEH d.o.o. integrator. Not only you will get a head start, but you will also become a part of the growing group of LPC users, get a chance to ask direct questions to experts, get contacts with other integrators and companies all over the world ...

For more information, call *+386 5 388 44 00* or e-mail to *info@smarteh.si* and reserve your ticket for the LPC certificate training:



1.2 What This Document Contains

This document contains the following chapters:

- Chapter 1, "*About this document*". Introduction to purpose of this document.
- Chapter 2, *"First Steps"*. Provides new users with the basic knowledge to get them going with the software. A quick tutorial is provided to explain frequently used features. You should be able to use most of the application functions after you complete this chapter.
- Appendix A, *"Compatibility"*. Informs you about system requirements.
- Appendix B, *"Error Reporting"*. Provides you with the list of what should be described in case you found a bug or have an improvement idea.

1.3 Terminology

Throughout this manual, various phrases are used. Here is a description of some of them.

1.3.1 LPC Family products based terminology

LONGO™
... is a family of products (hardware and software) and is a trademark of SMARTEH d.o.o.

LPC-2 Programmable Controller
... is a family of hardware modules (MCU module and I/O modules).

Smarteh IDE, LPC Manager
... are members of family software.

1.3.2 LON based terminology

LON®, LonWorks®, LonMaker™ for Windows
... are trademarks of Echelon Corporation. LON is an abbreviation for Local Operating Network.

SNVT
Standard Network Variable Type (pronounced “snivet”). Use of these variables types contributes to the interoperability of LonWorks® products from different manufacturers. A complete list of SNVTs (SNVT Master List) is available from the LonMark Association.

1.3.3 Conventions used in this document

Items appearing in this document are sometimes given a special appearance to set them apart from the regular text. Here's how they look:

Italic
Used for marking important keywords.

NEW:
Used to mark sections which changed most from previous versions.

2 FIRST STEPS

2.1 Smarteh IDE description

LPC (LONGO Programmable Controller) is a product that can be used in many different fields. Therefore it has to be as versatile as possible. Modularity allows this. Each LPC configuration is composed from one or more modules. There are countless combinations; each one specific to meet the requirements of the project.

However there are several rules that describe how different modules can be added to a configuration. Besides the common rules that apply to all modules, there are special rules which only apply to certain modules. This makes it quite hard to manually create the configurations. Here comes *Smarteh IDE* software; it is the software which allows you to compose the desired combination of modules so that the resulting configuration is valid and all rules are followed. It hides the complexities of the assembling rules being simple and easy to understand operations.

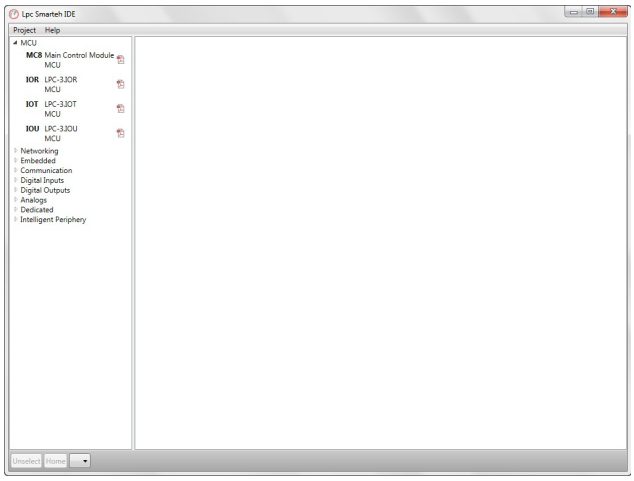
2.2 Installation

Installation of the LPC is a very simple process. Simply start the installer package by double clicking it's icon. The installer will lead you through all the required steps. Standard Windows installer is used makes this step easy and straightforward.

After the installation is complete, you can find the application icon in the Windows start menu.

2.3 Quick Tutorial

When the application starts, you are presented with the main window and a new project.



Because there is no configuration in the project yet, it appears empty. We'll work on that soon.

For the moment take a look at the window layout. The main area is occupied by project display. This is the area where configurations and modules will be displayed. This is also where most of the interaction with the configurations and modules will be handled.

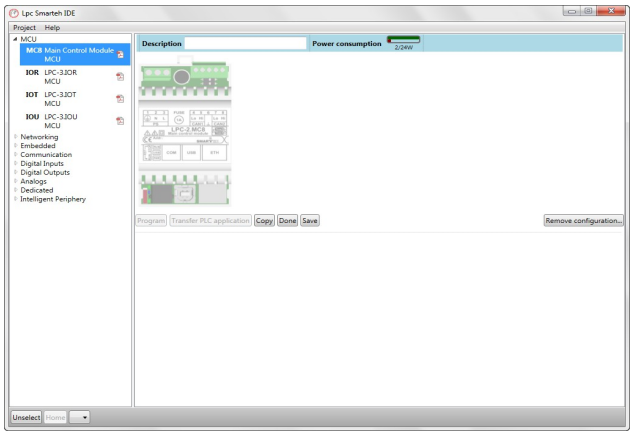
The left or right side of the window is occupied by modules list. It contains the list of all LPC modules from the database. You can scroll down to see the whole list. Some basic information about each module is displayed.

These are the two most important parts of the main window. You'll see how to use and read both of them in a little while.

2.3.1 Modules list

First let's see how modules list works. Modules list is the starting point for most of the modules assembling. It allows you to select the modules and then assemble them to one or more configurations. This is the fastest way to create new configurations and add modules to them. At the same time it is the only way to visually see what modules can be assembled to what configurations.

To create a new configuration, you need to first select the desired MCU module from the modules list. Let's do that – the following tutorial will assume you click indicated modules, but you may also use other modules if your database doesn't contain them. Notice how the modules in the modules list are grouped into several sections. The MCU section is the first section.

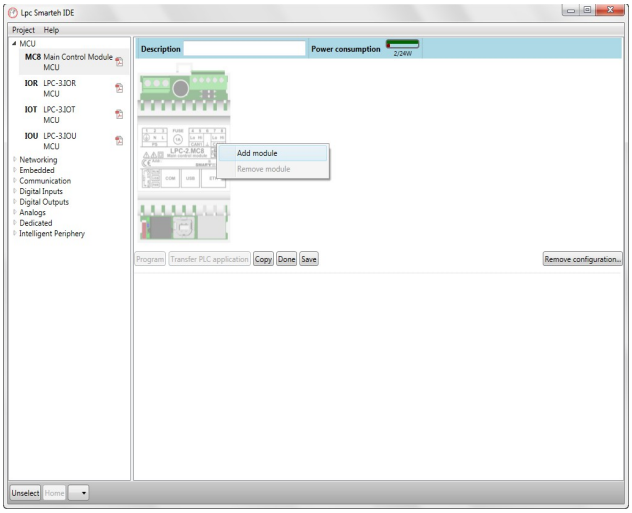


Click on *MC8* module. Immediately you can notice two things: the modules list highlights the selected module and displays some more information about it. And the second thing is that a configuration is created and the selected module is added to it.

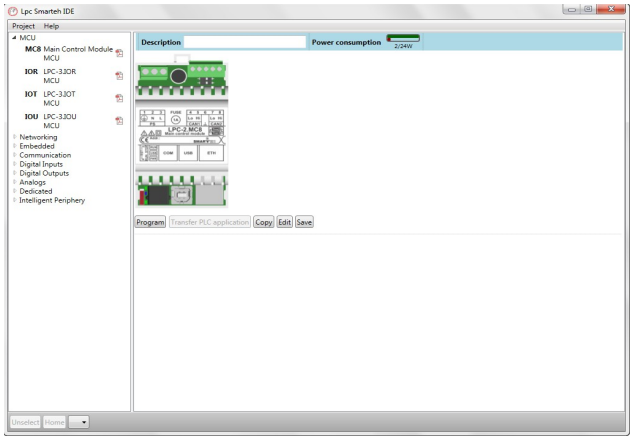
2.3.2 Adding modules from modules list to configurations

Ok, so now you understand how to select a module from the modules list and how to read the module information if desired. You also noticed that a module was displayed in the project window after selecting the MCU module.

Actually two things happened: a new configuration was added to the project and the selected MCU module (MC8 in our case) was added as the MCU module to that configuration. Actually nothing was added to the project yet. When you select a module in the modules list, the application determines to which configurations the selected module can be added and indicates all these possibilities with slightly transparent module image. If you select another module in the modules list, previously indicated modules are cleared and possible positions for new module are displayed.



To actually add the module to the configuration, you need to click on MCU module on the module list. On the right side (configuration area) it appears a placeholder for the selected module, which is not added to configuration yet. Now you have to click on module with the right mouse button and choose “Add module” as shown picture.

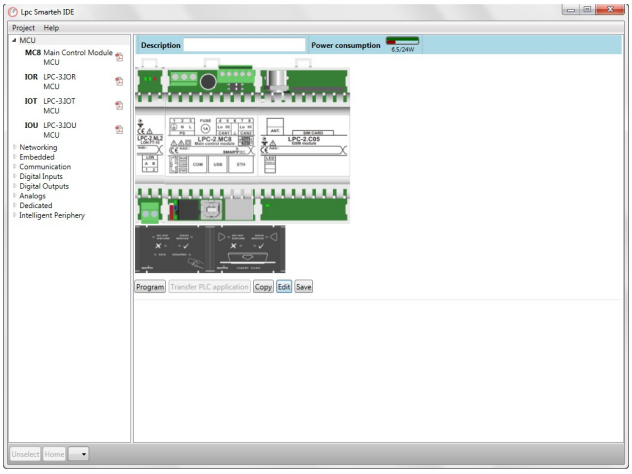


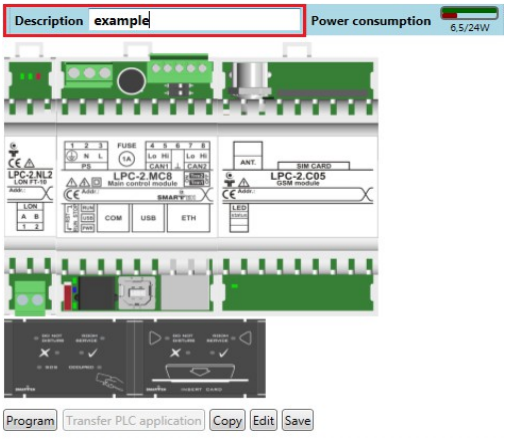
When the configuration into which you want to add the module is highlighted with a green color, you can release the mouse and then the module will be really added. You can immediately notice that the module is no longer drawn semi-transparently but is now drawn opaque. If you select another module now, the added module will stay in the configuration.

You can also notice the star appeared in the window title bar. This indicates that the current project has changed and changes were not yet saved. If you want to add the same module to more than one configuration, you need click the mouse right button and add it to the second configuration and so on.

To make the story short: to add the module from the modules list requires a two step process: the first step is to select the module in the modules list. This will indicate optimal positions for the module in therms of programming. The second step is to click on selected module placeholder and add module to configurations with option “Add module”.

Let's add some more modules (NL2, C05, CA1, CH1) to make the operation clearer. Select the modules and add them to the configuration. Note that you must first select module in the list by clicking on it and then add it to configuration. You might have to scroll the modules list downwards to see these modules. Modules can normally be added in any order; adding modules in a different order may result in different module order within the configuration. However some modules depend on other modules.





After adding all the above modules, your configuration should look something like this.

You may need to clear current selection to remove the semi-transparent selected module from the configurations. You can do that by clicking on semi-transparent modules and selecting “Done” button which is located under configuration.

You can create new configuration by selecting a MCU module again and then put all desired modules to it. The application will make sure each configuration is valid; if a selected module cannot be added to the condiguration, the module will not appear and you will not be able to put it.

The picture of the configuration on the screen resembles the actual configuration, so it is important to assemble the modules in exactly the same order as the application suggests!

Saving project

Before you save the project, you have to set the description.

Use “Save” button below configuration or Project > Save option (CTRL+S) in the menu (both options save all configurations). Now you are able to create new configurations and work with all different MCU modules. From now on we will investigate how to change different module and configuration parameters.

NOTE: “Copy” button, makes another copy of configuration in the same project.

2.3.3 Viewing configuration parameters

The project display shows how the modules are assembled in a configuration. To get more information about the configuration, you can see on the top of configuration.

Here is descripion of the configuration and power consumption view.

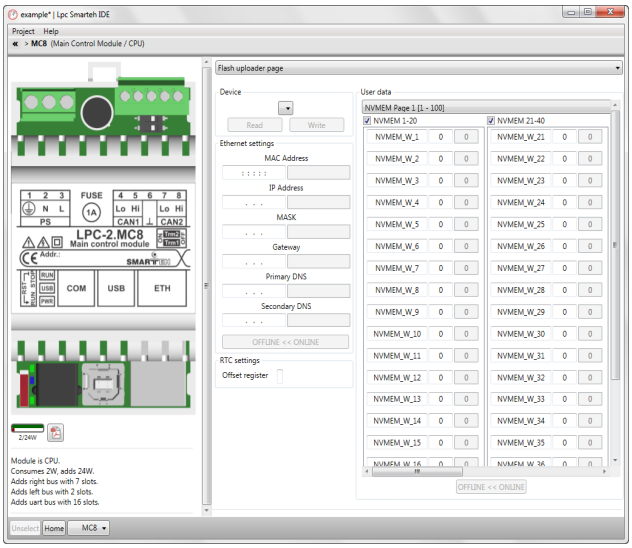
The configuration description is meant to given each configuration some short text which will make it easier for you to distinguish in projects with many different configurations.

The power consumption shows the configuration total power consumption which is the sum of power consumptions of all modules and the maximum possible power consumption (available power). You also get graphical representation of the power consumption where you can visually estimate how much power is used and how much still remains.

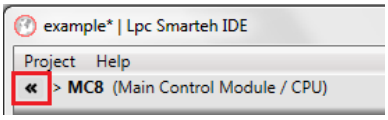
Let's name our configuration; you can use any name you like, in this tutorial we'll use “example”.

2.3.4 Viewing module parameters

By double clicking a module in the configuration, module parameters window will open for that module. This is where you can parameterize the module and get more information about it. This is the screen you might spend most of the time while working with *Smarteh IDE*. It is very complex screen in terms of different options you can choose, but also very simple to work with after you get used to it. To start with a simpler example, double click on the *MC8* module first.



Immediately you can notice the screen is divided into three main areas. The top part occupies module parameter pages navigator, the main part is occupied by module parameters and image and the bottom part by module info and modules navigator.



NOTE: Returning back to home (start) page options:

- click on “<<” button,
- click on “Home” button,
- press CTRL + H.

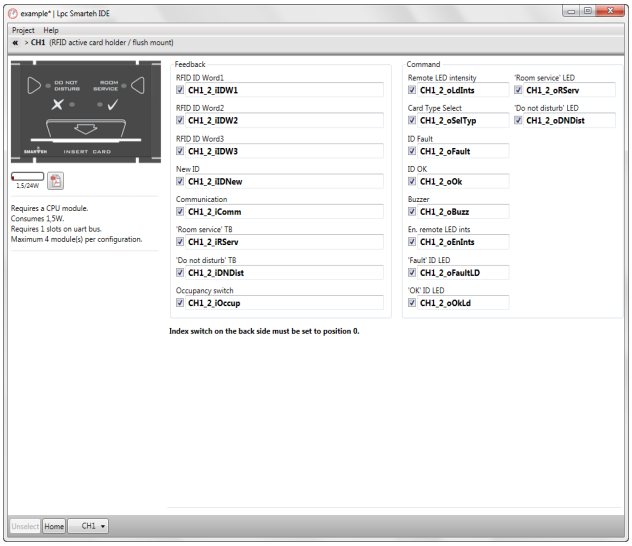
2.3.5 Module information and parameter settings

First let's investigate the module information panel. It occupies most of the space bellow the module image in the left part of the screen.

The mode info displays module power consuption. You can also see information about processor and adds.

2.3.6 Changing module parameters

Now that you can check different module information, it is time to see how you can change module parameters. By dobule click on module or choosing module from drop down menu on the bottom which you want parametrized, you can see module parameters.



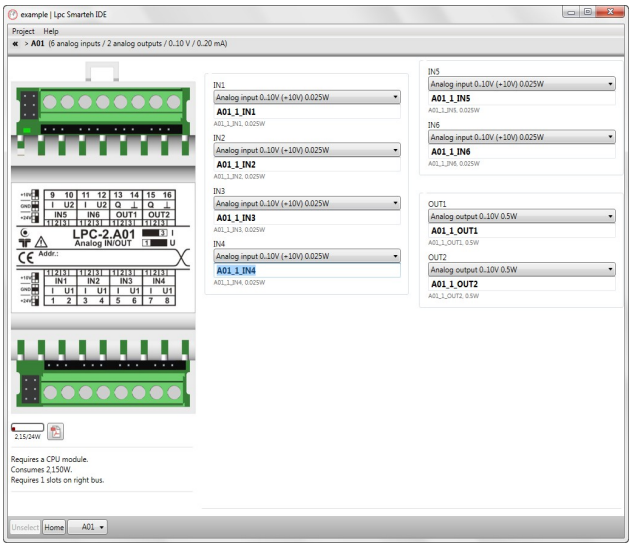
Here you can see different module signals, their description and name as will appear in *LPC Manager* once the configuration is exported.

You may notice that that parameters are vertically grouped.

Since this module displays all parameters on one page, the parameter pages navigator at the top of the window is hidden, but it does display the list of all groups. If there is more than one parameter page available for a module, you can change to different pages using this navigator (check *C05* for example).

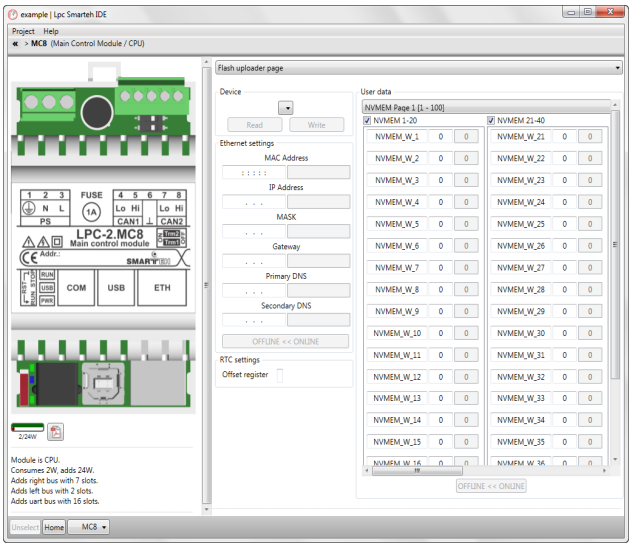
You may also notice the text at the bottom of the module parameters, below the signals. This text provides you with more information of how to setup the hardware to make it work by the given specification.

Notice the default signal names. They are composed from the module ID (which is usually a three letter word), module position within the configuration or bus and signal ID. Most of the time this is enough, but you may want to give specific signals more meaningful names such as *Start_Engine*, *Room_Temp*, *Temp_Command* etc. You can do that by clicking the mouse into frame of any signal which name you want to change. Then <ou can enter the desired signal name. The change is immediately accepted. To remove the name and use default one, you can clear the text. When another signal is selected, the default text will be displayed.



Notice that *A01* module allows you to change the type of the signal with dropdown menu. Changing to a different type will affect the module power consumption.

Power calculation is displayed under picture of the module.



MC8 parameters

MC8 module contains more parameters like other modules. MC8 specific module parameters are network settings, RTC variables, modbus variables and non-volatile memory variables and can be found on a flash uploader page.

Flash uploader page

Here you can change non-valuation memory variables (NVMEM) and some other device settings like IP adress. So if you want to modify that parameters what you have to do first is to click on button “Read”. Smarteh IDE will read Network and NVMEM parameters which already exists on the module.

NOTE: The device must be set in “bootloader” mode to read or write to device.

NOTE: Don't change MAC address if is not necessary!

When the parameters are read, you have to click on “OFFLINE << ONLINE” and then you can change the settings and parameters to your specified need. New settings and parameters are transfer to MCU by click on button “Write”.

Assembling problems

If total module power consumption is too much for the configuration, you cannot add more modules.

2.3.7 Programming with LPC Manager

When the configuration is done, LPC Manager (Beremiz) can be started (before starting LPC Manager, the project must have description and be saved. Check * in the name of the project).

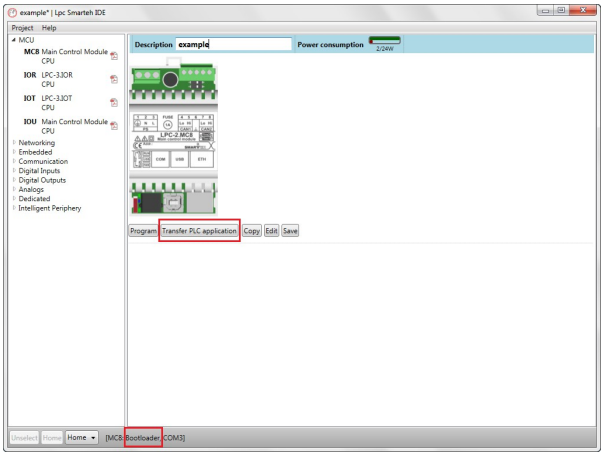
Use “Program” button below configuration or select the configuration and go to Project > Program in LPC Manager option in the menu (CRTL + P). This will open LPC Manager aplication.

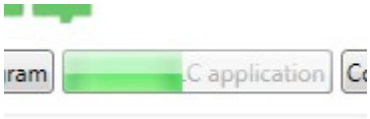
If the “Program” button or option Program in LPC Manager is not available means that you are in edit mode or the configuration in not valid. So you complete the editing by pressing button “Done” and eliminate all the problems. Now you are prepared to program in LPC Manager.

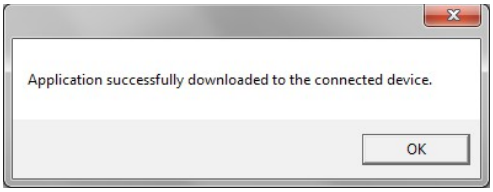
NOTE: opening LPC Manager application may take a while.

IMPORTANT: Note that you need to physically assemble the modules in the exact order as they are in main window and set their settings as indicated in the module parameters window, otherwise the configuration may not work properly!

2.3.8 Transfer PLC application







This function transfer PLC program to MCU device, without using LPC Manager. First you have to connect MCU module to your computer and set it to bootloader mode. You can check the MCU state at the bottom of window as shown in picture ([MC8: Bootloader, COM3]). After successfull transfer you get confirmation message: “Application successfully downloaded to connected devide”.

NOTE: PLC application must be build in LPC Manager at least once and the PLC application files must exist in order to provide this functionality.

Progress bar.

Application downloaded to device.

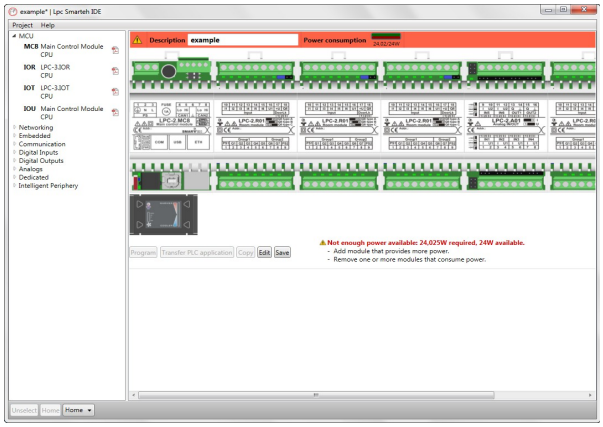
2.3.9 Save project release and open project release

This function prevents unauthorized use of the program. All configuration must be build to save the project release. Save Project Release function saves already built project to another file which can be send to unauthorized user. This file must be open by Open Project Release function and the user can transfer the exiting applications to the MCU devices.

2.3.10 Assembling problems handling

Although the LPC Composer prevents you from creating configurations with assembling problems as much as possible, it cannot prevent you from turning a valid configuration into an invalid one. This can happen when you change the configuration of a module inside module parameters window.

If this happens, you will be notified inside the module parameters window as described above in *"Changing module parameters"* section. The message will be displayed on the main window also.



The configuration which is problematic has a red bar on the top of configuration and the problems description at the bottom.

Possible power solution indication is only displayed if it is possible to correct the power consumption problem by reducing the power consumption of one or more modules of the configuration without making them not-used. You should change signal types or other parameters for these modules. If you cannot do this (the project you are working on requires these parameters for example), you may correct the error by adding a module that adds power to the configuration. If this is not possible either, then the only solution is to remove one or more modules from the configuration.

APPENDIX A – COMPATIBILITY

Smarteh IDE has the following system requirements:

- Microsoft Windows 7 or later.
- 32-bit 1024 MB RAM.

  64-bit 2048 MB RAM.
- 1.5 GB of free hard disk space.
- Resolution min 1024*768

APPENDIX B - ERROR REPORTING

If you think you found a bug in our software or you have an idea of what can be improved or added, you are most welcome to share your thoughts with us. We will consider the possibilities and try to include them in our next release.

You should contact your vendor with the description. The following information should be included:

- Software version.
- Detailed description of the bug or idea.
- If possible, steps that will recreate the problem (if bug is being reported).
- The application log file.
- Your contact information (e-mail, phone, fax).

In case we need more information we may need to contact you before we can determine the exact solution. And remember: the only software without a need for maintenance is the software not being used!

If the application encounters problems during the runtime, it will automatically increase the log file verbosity. Furthermore, when the application is closed, it will create a log file copy which will remain until next error is encountered (at that point, the file will be overwritten). When you close the application after the session in which the error was detected, the application will still continue to use verbosed log in the next session as well. This allows us to detect any possible problems during startup. The logging verbosity is switched back to normal after the application is closed unless another error was detected.

So if you are warned about an error, first try to reproduce it immediately. If this is not possible, restart the application and try to reproduce it then. Then close the application and send both log files (normal and the copy that was automatically created) to your software vendor.

If the application doesn't detect an error, but you think something doesn't work as it should, you can manually switch verbosed logging on through the application preferences window. Then work with the application in the area you think doesn't work. *Switch verbosed logging back to normal as soon as possible (don't forget this because verbosed logging will use a LOT of space on your hard disc and may cause the application to run much slower than ussually).*

The location of log files is your documents folder (*My Documents\SMARTEH\Smarteh IDE*). This folder is automatically created for you on the first run. The names of the log files are:

- *LpcSmartehIDE.log* for normal log.
- *Errors.log* for log file created after an error was detected.

APPENDIX C – LICENSE

SMARTEH Smarteh IDE
Smarteh IDE 5.x.x.xx Setup
http://www.smarteh.si

This End-User License Agreement (“EULA”) is a legal agreement between you (as an individual or a company) and SMARTEH d.o.o. for the software product identified above, which includes computer software and may include associated media and "online" electronic documentation files ("SOFTWARE PRODUCT"). By installing, copying, or using this SOFTWARE PRODUCT, you acknowledge that you have read, understood, and agreed to be bound by the terms of this LICENSE AGREEMENT. If you do not agree to these terms, do not install or use the SOFTWARE PRODUCT.

1. GENERAL TERMS

By downloading, installing, or using the SOFTWARE PRODUCT, you acknowledge that you agree to the terms applicable to the specific product you are using. If you do not agree, do not install or use the SOFTWARE PRODUCT.

This SOFTWARE PRODUCT is intended for programming Smarteh’s programmable controllers, including but not limited to LPC-2.MW1 and all newer products supporting the five languages defined in the IEC 61131-3 standard.

If you violate any license terms, your rights to use the SOFTWARE PRODUCT automatically terminate. SMARTEH d.o.o. reserves the right to revoke your access to any proprietary software at its discretion.

Each version or update is assigned a unique version number. If the SOFTWARE PRODUCT references a specific license version along with the phrase "or any later version," you are bound by the latest published license terms by SMARTEH d.o.o.

2. SOFTWARE CATEGORIES AND APPLICABLE LICENSES

The SOFTWARE PRODUCT comprises three distinct components:

1. SMARTEH Composer (a proprietary software component)

    -All rights reserved.

2. SMARTEH LPC Manager (an open-source component)

    -SMARTEH LPC Manager is a modified version of Beremiz: **(C) Beremiz SAS, France**

    -All modifications and integrated components are licensed under **GPL-2.0.**

    -The complete source code is provided with this distribution.

3. Special Tools (additional components)

    -These components are distributed as part of this package but are governed by their respective licenses.

2.1. SMARTEH COMPOSER License

The SMARTEH COMPOSER is classified as freeware. It may be downloaded and used free of charge, and it must not be sold or redistributed for profit to third parties.

You may install and use the SMARTEH COMPOSER on multiple computers. You may also distribute it, provided that you do not modify or sell it.

You may not sell, decompile, reverse-engineer, or modify the SMARTEH COMPOSER without prior written consent from Smarteh d.o.o.

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2.2. SMARTEH LPC MANAGER License

Copyright (C) 2005-2024 Beremiz SAS, France
Beremiz is Open Source PLC. It brings Free Software IDE (GPL) and Runtime (LGPL) for machine automation, conforming to IEC-61131.

Modifications by SMARTEH d.o.o. (C) 2025
Modifications include: /

SMARTEH LPC Manager is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License v2.0 (GPL-2.0). The complete source code is provided with this distribution.

This program is distributed without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose. See the GPL-2.0 for more details.

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The entire risk regarding the performance of the SOFTWARE PRODUCT lies with you. If the SOFTWARE PRODUCT proves to be defective, you assume all costs related to servicing, repair, or data recovery.

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5. CONTACT

For inquiries regarding licensing, please contact:

Smarteh d.o.o.

Poljubinj 114 5220 Tolmin
Email: support@smarteh.si
Website: http://www.Smarteh.si

Ljubljana, January 2025

APPENDIX D - CHANGES

The following table describes all the changes to the document.

Date	V.	Description
12.07.17	1	The basic version, issued as *Smarteh IDE - User Manual*.
12.06.25	2	Added Appendix C - License