Readme LL984 Library V4.1 for Unity Pro

Product: 984 Library Part number: UNYLBGSLE 984L41

1. Preface

The installation of LL984 library V4.1 works with **Unity Pro V6.x and former Unity versions**.

This Installation Guide will help you to obtain and install the LL984 Library V4.1 properly to Unity Pro. The LL984 Library does NOT have to be registered after installation**.**

Be sure to make an Export (XEF) file of all your previously converted 984 applications BEFORE you upgrade Unity Pro.

IMPORTANT:
DFB-Interface in PCFL / EMTH family changed in Library V4.1:
The DFBs in the families EMTH and PCFL use data structures (DDTs) instead of UINT-arrays. This is done to increase transparency of the converted applications. When converting applications with the LL984 Converter V4.1, the new DFB interface is automatically being used by the converter. If you update an application, which has been converted with a LL984 Library < V4.1, and which contains DFBs from the EMTH / PCFL family, you will get a "data type mismatch" error, when updating this application with the new Library V4.1.
For this reason the "DDT-Adaptation" tool is installed together with the Library V4.1. Using this tool, you can adapt your application to the new DFB interface in the V4.1 Library.
For detailed information how to adapt your application to the new Library see chapter "Unity Pro Application Upgrade" and "DDT adaptation tool".

2. How to get the LL984 Library

The LL984 Library V4.1 for Unity Pro is available from Schneider Electric Services only.
Please contact your local Schneider Electric correspondent to receive a copy of this library.

The Library is delivered as part of a Zip archive "LL984_Library_V4.1.zip", which contains the following files:

LL984_Lib_V4.1.xx_Setup.exe	: LL984 Library Setup file
LL984_Lib_V4.1_UserManual.EN.pdf	: User Manual for LL984 Block Library
LL984_Lib_V4.1_ReadMe.EN.pdf	: Installation information (the present file)
LL984_Lib_V4.1_ReleaseNotes.EN.pdf	: Latest information on LL984 Library
DDTAdaptation.exe (.xml)	: DDT Adaptation tool

3. Compatibility with Unity Pro

The LL984 Library V4.1.17 is compatible and usable with the following Unity Pro version :

- **Unity Pro V2.3 SP2**
- **Unity Pro V3.x**
- **Unity Pro V4.x**
- **Unity Pro V5.x**
- **Unity Pro V6.x**

The LL984 Library can be used on Premium, Quantum and M340 PLCs.

4. System requirements

The system requirements for the LL984 Library are the same as for your installed version of Unity Pro.

5. Uninstall of older LL984 Lib versions

If you have already installed a previous version of the LL984 library, there is no need to uninstall the old Library before installation of the new Library, because older libraries are automatically uninstalled. An exception is the upgrade from Unity V5.x to Unity V6.x. The Library setup for Unity V6.x is not compatible with previous Library setups. For this reason it's recommended to uninstall the Library before upgrading to Unity Pro V6.x.

If you want to uninstall LL984Lib V4.x and Unity Pro, then you must **first uninstall the Library and then Unity Pro**, because the uninstall of the Library is using a Unity Pro service. In case of Unity Pro is not installed, the Library uninstall will fail. (see chapter 11 for more details)

Existing LL 984 Library versions:

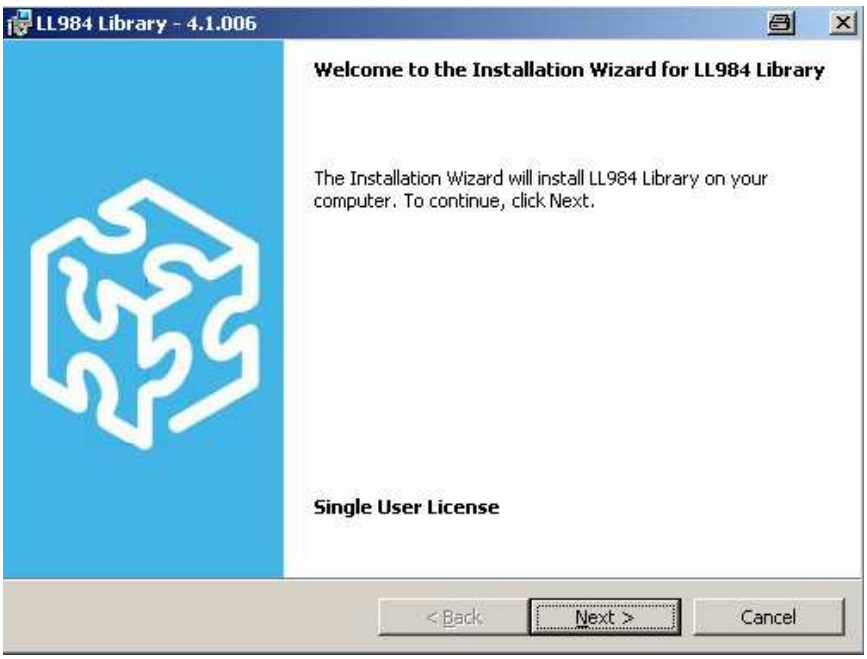
Unity LL984 Library				
Version	Setup file	Supported Unity Version	Release Date	Release Status
V4.1.17	**LL984_Lib_V4.1.17_Setup.exe**	**V6.x, V5.x, V4.x, V3.x V2.3 SP2**	**07 / 2011**	**official release**
V4.1.16	LL984_Lib_V4.1.16_Setup.exe	V4x, V3.x V2.3 SP2	07 / 2009	official release
V4.0	LL984_Lib_V4.0_Setup.exe	V4.0, V3.x V2.3 SP2	06 / 2008	official release
V3.1e	984_Lib_for_Unity_v3.1e.exe	V3.1	14.12.2007	official release
V3.0 SR3b	984_Lib_for_Unity_v3.0_SR3b.exe	V3.0	14.11.2007	official release
V2.3 SR7b	984_Lib_for_Unity_v2.3_SR7b.exe	V2.3	26.09.2007	beta version
V2.0	984 library v20 setup.exe	V2.2	26.02.2007	official release
V1.2	984 Library Setup V 12.exe	V2.2	22.11.2005	official release

6. Installation of LL984 Lib V4.1

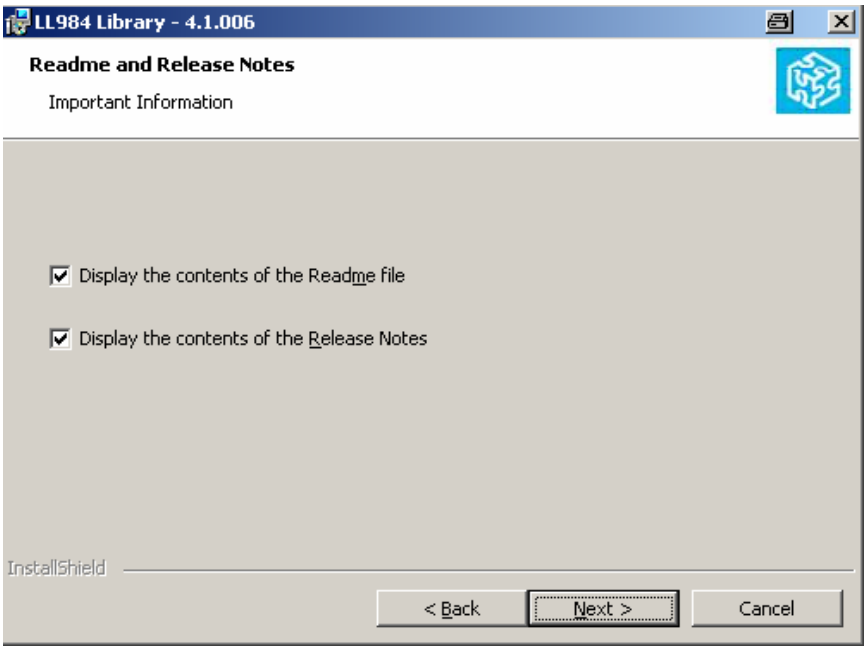
Please check that you have **administrator rights** on your PC. During the installation phase, it is recommended to **disable all the Antivirus services** and to close all your running applications. Copy the Setup file to your computer and start it. Follow the instructions displayed on the screen:

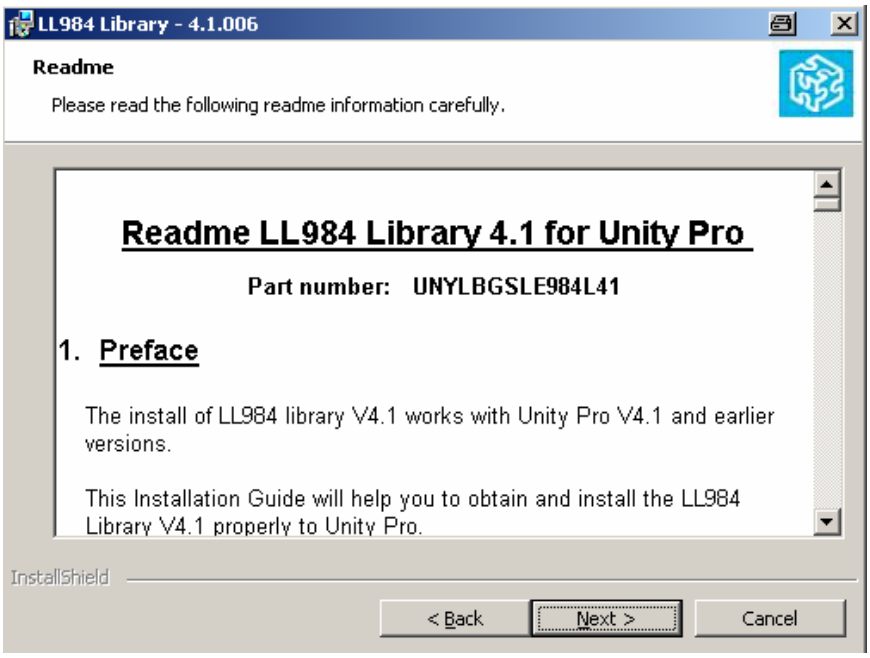
Installation steps:

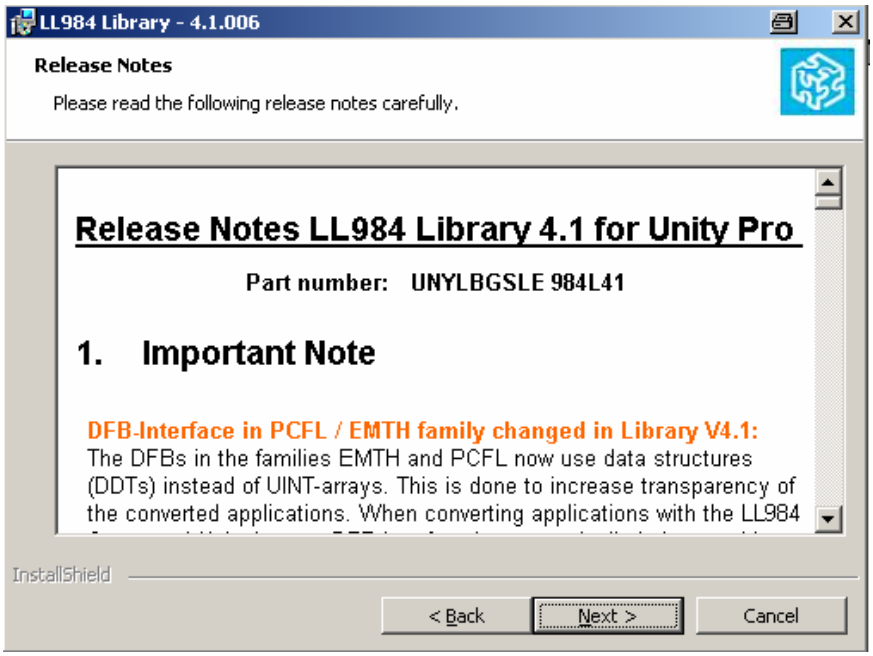
Welcome screen



User information (Readme and Release notes)




LL984 Library - 4.1.006
Readme
Please read the following readme information carefully.
Readme LL984 Library 4.1 for Unity Pro
Part number: UNYLBGSLE984L41
1. Preface
The install of LL984 library V4.1 works with Unity Pro V4.1 and earlier versions.
This Installation Guide will help you to obtain and install the LL984 Library V4.1 properly to Unity Pro.
InstallShield
< Back
Next >
Cancel


LL984 Library - 4.1.006
Release Notes
Please read the following release notes carefully.
Release Notes LL984 Library 4.1 for Unity Pro
Part number: UNYLBGSLE 984L41
1. Important Note
DFB-Interface in PCFL / EMTH family changed in Library V4.1:
The DFBs in the families EMTH and PCFL now use data structures (DDTs) instead of UINT-arrays. This is done to increase transparency of the converted applications. When converting applications with the LL984
InstallShield
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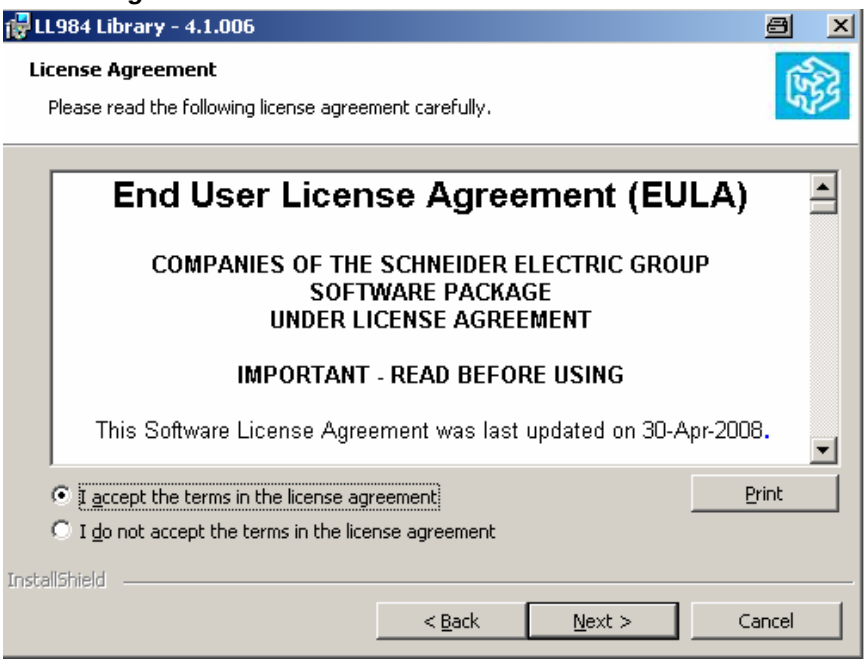
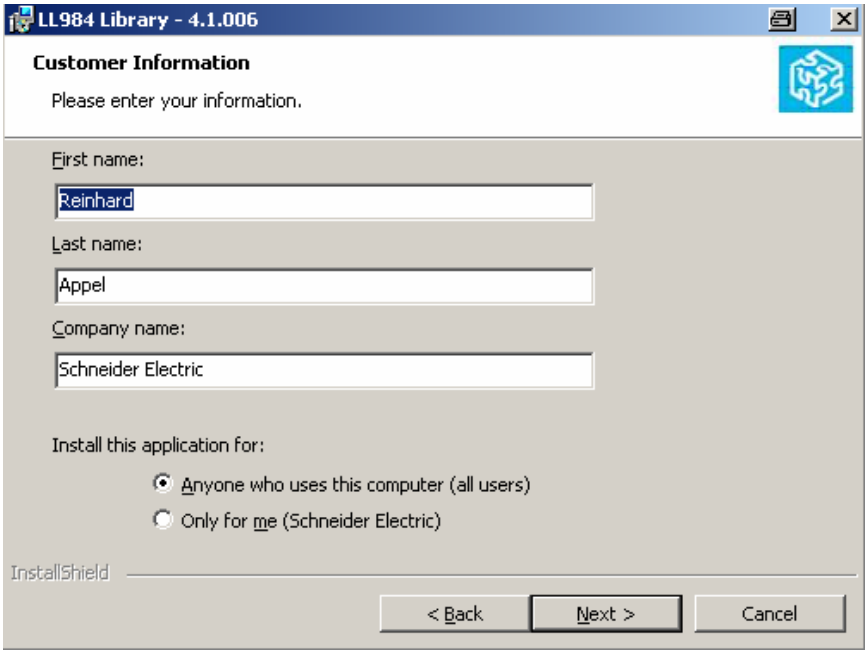
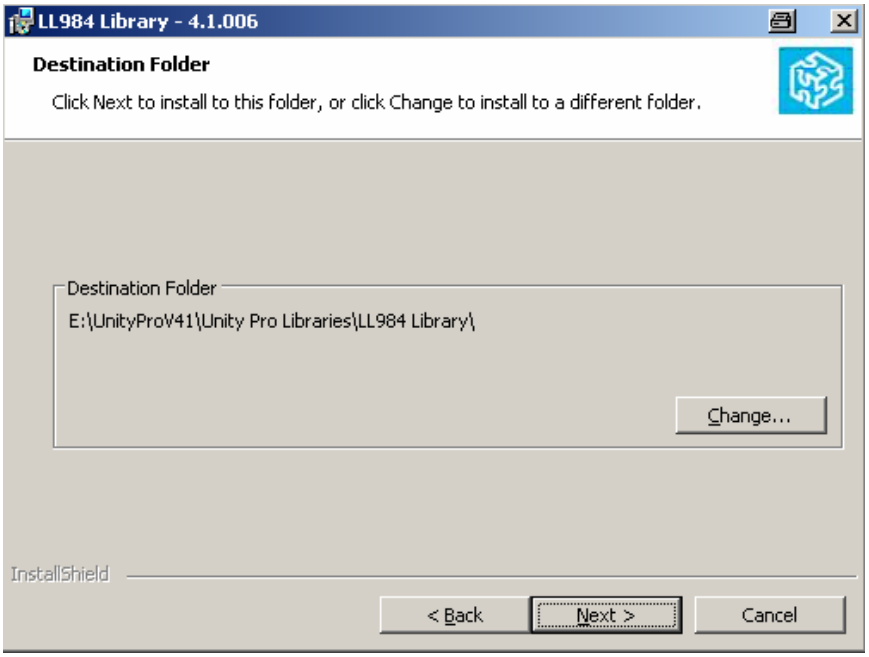
License Agreement



Customer information

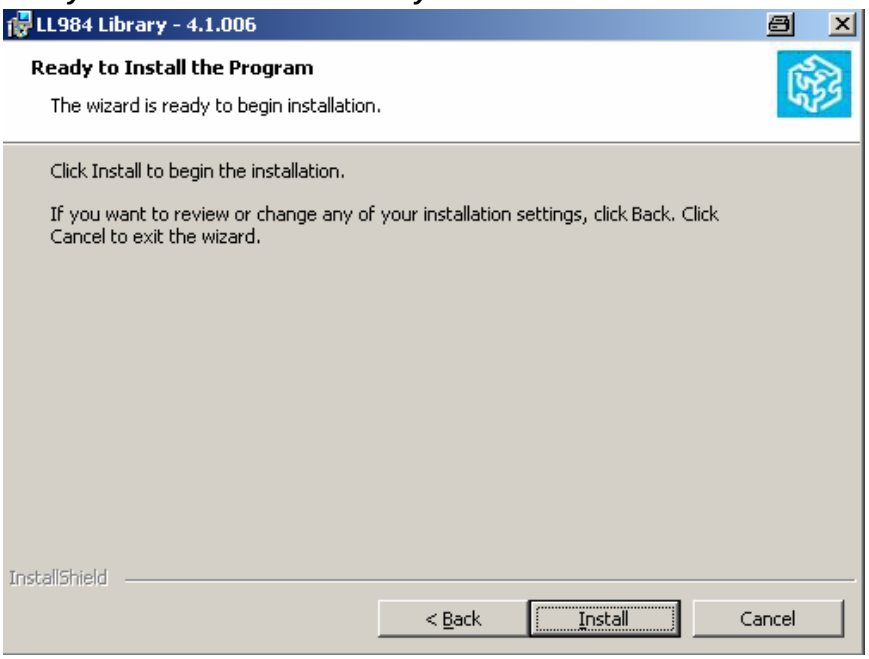


Destination Folder



Here you can specify the destination folder for the LL984 library documentation. The path is initialized with the standard installation path of Unity Pro.

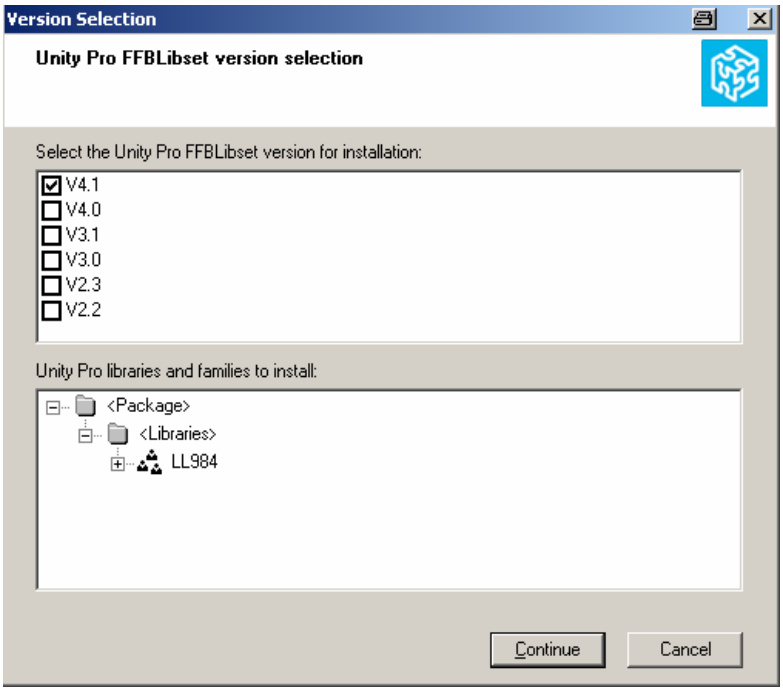
Ready to Install the LL984 Library



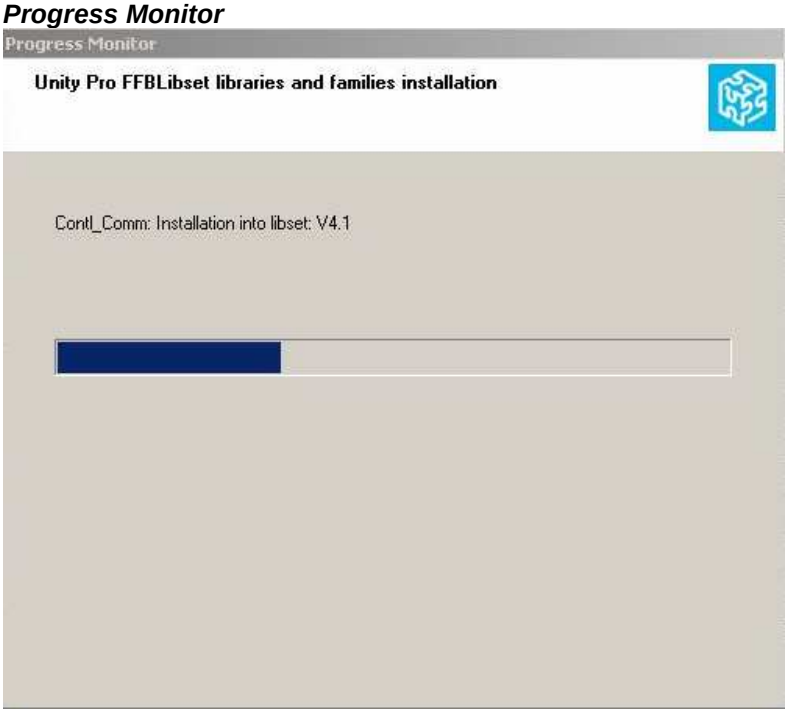
Unity Pro FFBLibset version selection (for Unity Pro >=V4.0)

This dialog only appears, if you have Unity Pro >=V4.0. Here you can select the libset versions, into which the LL984 Library will be installed. Unity Pro manages several versions of libraries in order to preserve the current library version used in projects.

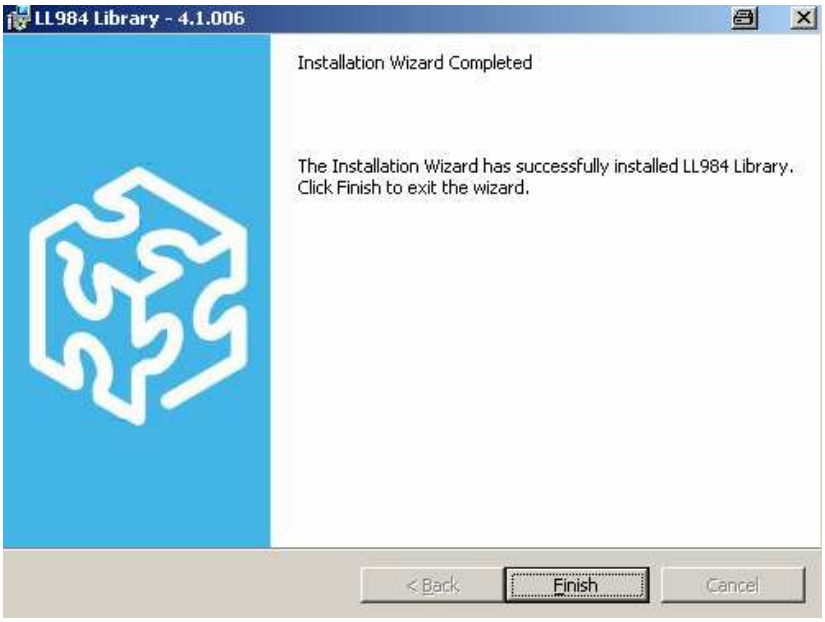
Example: If you have selected V4.0 and V4.1 **then the LL984 Library V4.1 will be installed twice (into Libset-version V4.0 and V4.1)**



Progress Monitor



Final screen



7. Uninstall or Modify LL984Lib V4.1

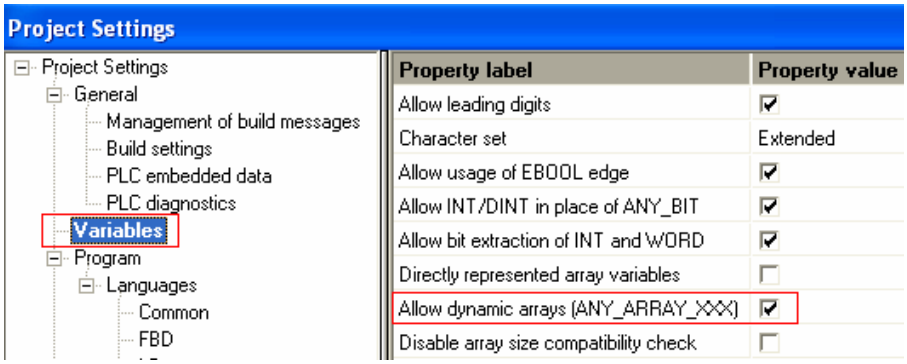
- **Uninstall:** Start the setup again and select the “Remove” or use the “Add / Remove Programs” function from your Windows operating system to uninstall the LL984 Library V4.1

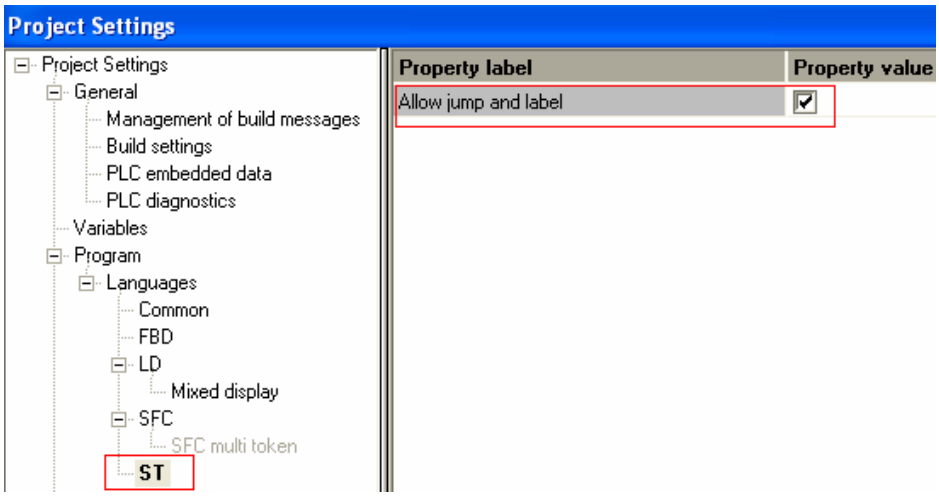
- **Modify:** Start the setup again and select “Modify”. Now you will see the “Unity Pro FFBLibset version selection” dialog. Here you can install the LL984 Library into another libset version by selecting this version, or you can uninstall it from the libset version by de-selecting it (only with Unity Pro >=V4.0). If you are going to use the ‘Modify’ option under Windows Vista, please read chapter “Other important notes’ before.

8. Unity Pro Project Settings

When using FFBs from the LL984 Library within your project, you need to select the following two options in the menu “Tools--> Project Settings”.

- Allow dynamic arrays (ANY_ARRAY_XXX)
- Allow jump and label (ST)





If you “Rebuild” your project without these options, you possibly will receive the error

- E1208: usage of dynamic array is disabled
- E1206: usage of jump statements is disabled

9. Unity Pro Application Upgrade

9.1 Overview

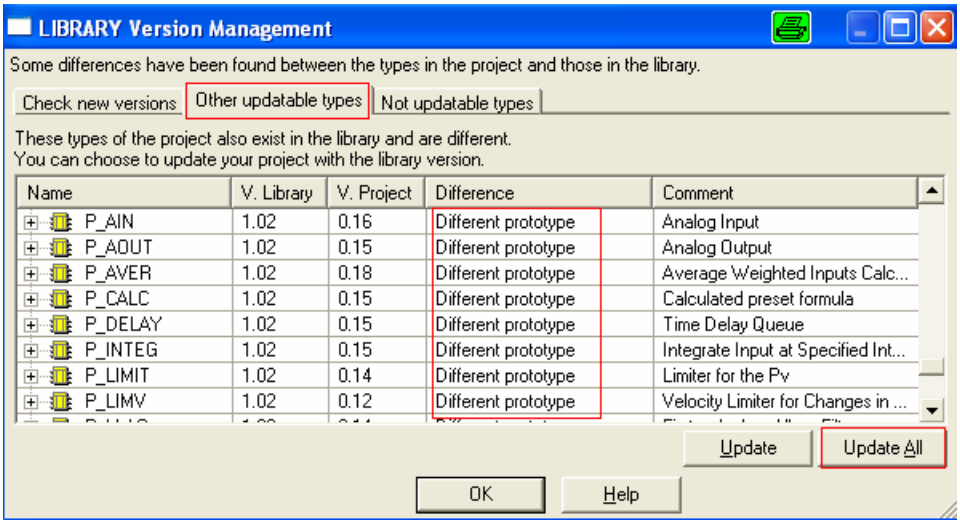
In order to upgrade your application to LL984 Lib V4.1 you need to perform the following steps.

Step	Action	Comment
1	Export all your projects using the existent Unity version	XEF file of application is created
2	Uninstall LL984 Lib < V4.1.xx	Step 2-4 is only necessary, if you want to upgrade your Unity Pro version too.
3	Uninstall old Unity Pro version	
4	Install new Unity Pro version	
5	Install LL984 Lib V4.1.xx	Old LL984Lib < V4.1 will be overwritten (if existent)
6	Use DDT-adaptation tool to convert XEF-file from previous Unity-version to LL984Lib V4.1 → result is a new XEF-file (xxx_D.xef)	Necessary, if you have used EMTH or PCFL DFBs from LL984 Lib. (for more details see chapter 10)
7	Open (new) XEF-file with Unity Pro	EFBs of your project are upgraded to LL984 Lib V4.1 automatically. If the dialog “Copy types to application” appears, click OK.
8	Use “Types Library Manager” and upgrade your DFBs with latest versions from LL984 Lib V4.1.xx	For more details see chapter 9.2
9	Rebuild your project	Your project has been converted to ll984Lib V4.1

9.2 Update project with Library

If you have installed LL984 Lib V4.1 and converted your project with the DDT-adaptation tool, you need to update your project with the latest DFB-versions from the new Library by using the Unity Pro Types Library Manager (see menu “Tools \Types Library Manager”).

- Start the “Types Library Manager” and select the menu “**Compare Project with Library**” from the context menu. (The context menu is opened, if you click the right mouse button in the Types Library Manager). If there are no differences you will get the message “No differences have been found….”) If differences have been found the **“Library Version Management”** dialog is opened.



- In the ”Library Version Management” dialog click on **“Update All”** and in the following dialog **“Copy types to application”** click OK.

- Then select the Tab “**Other updatable types**” (see picture) and do the same again. Now your application has been updated with the types from the new Library V4.1

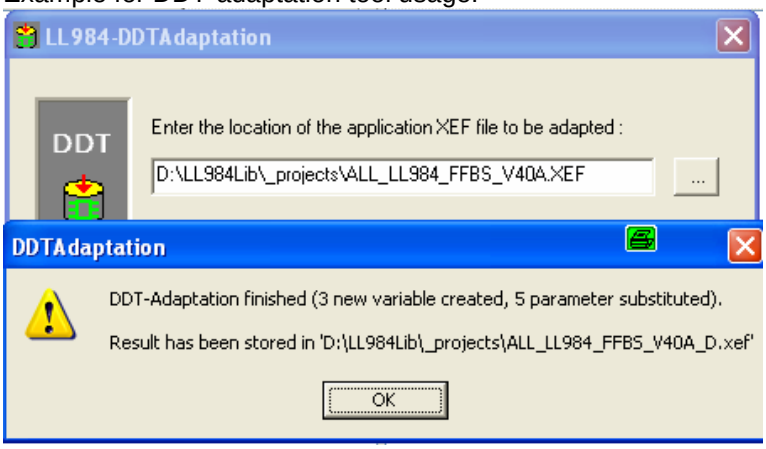
10. DDT adaptation tool

The DDT-adaptation tool is used to adapt a Unity application, which has been created with a former version of the LL984 Library (version <= 4.1) into the current Library version V4.1. This is necessary, because the interface of the DFBs in the PCFL-/EMTH family have been changed in the LL984 Library V4.1.

The DDT adaptation tool (DDTAdaptation.EXE) has been installed together with the LL984 Library V4.1 on your PC in the folder “Unity Pro Libraries \ LL984 Library”. (You can start the tool with “Start→ Programs→Schneider Electric→SoCollaborative→Unity Pro Libraries→LL984 Library”. Perform the following steps to adapt your application:

- Export your application with Unity Pro to an XEF-file
- Convert this XEF-file using the DDT-Adaptation tool. The result is an new XEF-file named xxx_D.XEF
- If adaptations have been made (number of substituted parameters >0)
  - Import the new XEF-file (xxx_D.xef) into Unity Pro
  - Rebuild your application

Example for DDT-adaptation tool usage:



Restrictions for the DDT-adaptation tool:

- Only Unity Pro applications, that have been created by the LL984-Converter can be adapted.
- Only FDB- / LD-section using DFBs from the PCFL / EMTH family are adapted.

List of DFBs, which will be adapted by the DDT adaptation tool:

Function-Block	Formal Parameter	Parameter Type (old)	Parameter Type (new)
E_ADDDP	SUM	ARRAY[1..6] OF UINT	DDT_DP_U_DP
E_ADDDP	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_ADDFP	SUM	ARRAY[1..4] OF UINT	DDT_R2
E_ADDFP	VALUE1	ARRAY[1..2] OF UINT	REAL
E_ADDIF	SUM	ARRAY[1..4] OF UINT	DDT_R2
E_ADDIF	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_ANLOG	RESULT	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_ANLOG	VALUE1	ARRAY[1..1] OF UINT	UINT
E_ARCOS	COSVAL	ARRAY[1..2] OF UINT	REAL
E_ARCOS	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_ARSIN	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_ARSIN	SINEVAL	ARRAY[1..2] OF UINT	REAL
E_ARTAN	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_ARTAN	TANVAL	ARRAY[1..2] OF UINT	REAL
E_CHSIN	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_CHSIN	VALUE1	ARRAY[1..2] OF UINT	REAL
E_CMPFP	VALUE1	ARRAY[1..2] OF UINT	REAL
E_CMPFP	VALUE2	ARRAY[1..4] OF UINT	DDT_R_RD
E_CMPIF	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_CMPIF	VALUE2	ARRAY[1..4] OF UINT	DDT_R_RD
E_CNVDR	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_CNVDR	VALUE1	ARRAY[1..2] OF UINT	REAL
E_CNVFI	VALUE1	ARRAY[1..2] OF UINT	REAL
E_CNVFI	RESULT	ARRAY[1..4] OF UINT	DDT_RD_DP
E_CNVIF	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_CNVIF	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_CNVRD	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_CNVRD	VALUE1	ARRAY[1..2] OF UINT	REAL
E_COS	RAD	ARRAY[1..2] OF UINT	REAL
E_COS	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_DIVDP	RESULT	ARRAY[1..6] OF UINT	DDT_DIVDP
E_DIVDP	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_DIVFI	RESULT	ARRAY[1..4] OF UINT	DDT_DP_R
E_DIVFI	VALUE1	ARRAY[1..2] OF UINT	REAL
E_DIVFP	RESULT	ARRAY[1..4] OF UINT	DDT_R2
E_DIVFP	VALUE1	ARRAY[1..2] OF UINT	REAL
E_DIVIF	RESULT	ARRAY[1..4] OF UINT	DDT_R2
E_DIVIF	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_EXP	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_EXP	VALUE1	ARRAY[1..2] OF UINT	REAL

E_LNFP	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_LNFP	VALUE1	ARRAY[1..2] OF UINT	REAL
E_LOG	RESULT	ARRAY[1..1] OF UINT	INT
E_LOG	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_LOGFP	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_LOGFP	VALUE1	ARRAY[1..2] OF UINT	REAL
E_MULDP	RESULT	ARRAY[1..6] OF UINT	DDT_DP3
E_MULDP	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_MULFP	RESULT	ARRAY[1..4] OF UINT	DDT_R2
E_MULFP	VALUE1	ARRAY[1..2] OF UINT	REAL
E_MULIF	RESULT	ARRAY[1..4] OF UINT	DDT_R2
E_MULIF	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_PI	PIVAL	ARRAY[1..4] OF UINT	DDT_RD_R
E_POW	RESULT	ARRAY[1..4] OF UINT	DDT_Z_UI_R
E_POW	VALUE1	ARRAY[1..2] OF UINT	REAL
E_SINE	RAD	ARRAY[1..2] OF UINT	REAL
E_SINE	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_SQRFP	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
E_SQRFP	VALUE1	ARRAY[1..2] OF UINT	REAL
E_SQRT	RESULT	ARRAY[1..2] OF UINT	DDT_S_F
E_SQRT	SOURCE	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_SQRTP	RESULT	ARRAY[1..2] OF UINT	DDT_S_F
E_SQRTP	SOURCE	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_SUBDP	RESULT	ARRAY[1..6] OF UINT	DDT_DP2_U
E_SUBDP	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_SUBFI	RESULT	ARRAY[1..4] OF UINT	DDT_DP_R
E_SUBFI	VALUE1	ARRAY[1..2] OF UINT	REAL
E_SUBFP	RESULT	ARRAY[1..4] OF UINT	DDT_R2
E_SUBFP	VALUE1	ARRAY[1..2] OF UINT	REAL
E_SUBIF	RESULT	ARRAY[1..4] OF UINT	DDT_R2
E_SUBIF	VALUE1	ARRAY[1..2] OF UINT	DDT_DP_VALUE
E_TAN	RAD	ARRAY[1..2] OF UINT	REAL
E_TAN	RESULT	ARRAY[1..4] OF UINT	DDT_RD_R
P_AIN	PAR	ARRAY[1..14] OF UINT	DDT_AIN_PAR
P_ALARM	PAR	ARRAY[1..16] OF UINT	DDT_ALARM_PAR
P_AOUT	PAR	ARRAY[1..9] OF UINT	DDT_AOUT_PAR
P_AVER	PAR	ARRAY[1..24] OF UINT	DDT_AVER_PAR
P_CALC	PAR	ARRAY[1..14] OF UINT	DDT_CALC_PAR
P_DELAY	PAR	ARRAY[1..32] OF UINT	DDT_DELAY_PAR
P_INTEG	PAR	ARRAY[1..16] OF UINT	DDT_INTEG_PAR
P_LIMIT	PAR	ARRAY[1..10] OF UINT	DDT_LIMIT_PAR
P_LIMV	PAR	ARRAY[1..14] OF UINT	DDT_LIMV_PAR
P_LKUP	PAR	ARRAY[1..39] OF UINT	DDT_LKUP_PAR

P_LLAG	PAR	ARRAY[1..20] OF UINT	DDT_LLAG_PAR
P_MODE	PAR	ARRAY[1..8] OF UINT	DDT_MODE_PAR
P_ONOFF	PAR	ARRAY[1..14] OF UINT	DDT_ONOFF_PAR
P_RAMP	PAR	ARRAY[1..14] OF UINT	DDT_RAMP_PAR
P_RATE	PAR	ARRAY[1..14] OF UINT	DDT_RATE_PAR
P_RATIO	PAR	ARRAY[1..20] OF UINT	DDT_RATIO_PAR
P_RMPLN	PAR	ARRAY[1..16] OF UINT	DDT_RAMPLN_PAR
P_SEL	PAR	ARRAY[1..14] OF UINT	DDT_SEL_PAR
P_TOTAL	PAR	ARRAY[1..28] OF UINT	DDT_TOTAL_PAR

11. Other important notes

11. 1 Install- /Uninstall sequence

The installation / uninstall of the LL984 Library is using the **Library Management services of Unity Pro.** In case of Unity Pro is not installed, the installation / uninstall of the library will fail.
Therefore to avoid any disturbances, it is important to keep the following installation sequence:

Installation

- First install Unity Pro
- Second install the Library

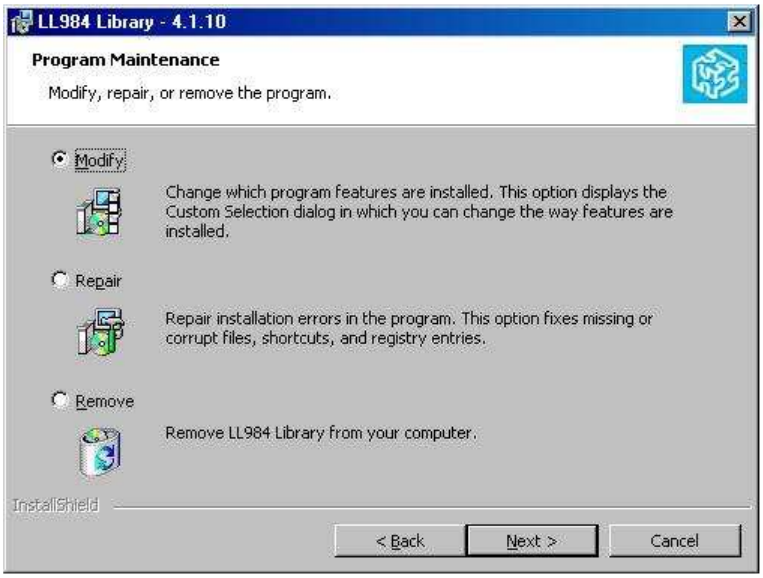
UnInstall

- First uninstall the Library
- Second uninstall Unity Pro

In case you want to upgrade Unity Pro and to keep the Library, it is sufficient to uninstall and re-install Unity Pro. Afterwards use the repair option of the LL984 Library setup to bring the library into the new installed Unity Pro.

11.2 Windows Vista

The installation options ‘Repair’ and ‘Modify’ don’t work correct with Windows Vista, if the User Access Control (UAC) is enabled. If you want to use the Repair / Modify option, you must deactivate the UAC, or uninstall the Library by using the ‘Remove’ option, and then ‘Re-Install’ the Library.



11.3 Reset of Error Log Register

The function block “E_ERLOG” is used to visualize floating point errors, which can occur during the execution of the FFBs of the EMath family. In the legacy 984 application the Error Log Register (EWORD) is automatically reset to zero, if the problem has been removed

In the Unity application this is not the case. If the error is removed the Error Log Register (EWORD) needs to be reset to Zero by the user, for example by inserting a function block at the **beginning of the application.** (see picture)