

# **TECH NOTE :: CODESYS applications with PMX**

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# Short description

This is a quickstart guide on starting CODESYS applications for PMX. Basic experience with CODESYS is assumed. Experienced users are free to differ. Further help is available in the examples that are normally installed on the desktop when the PMX package is installed and in the online Help for the package.

The required files are located on the "PMX CODESYS" CD included with delivery of every PMX containing CODESYS, or they can be downloaded from the support page of hbm.com.

# Introduction

- Installation of the CDESYS Software Suite by running the executable file "Setup\_CODESYS.....exe"
- Start the CODESYS software with administrator rights. To do this hold down the shift key and right click on the icon, then select "Run as administrator".
- To install the PMX package:

On the CD, in menu Tools – Package Manager – Install... find file "hbm-pmx.package" and select it. Select "Typical Setup".

The Package Manager now contains the PMX package:

Ø	Package Manager							×
	Currently installed package Refresh	25:			Sort by:	Name	-	Install
	Name	Installation date	Update info	License info				Uninstall
	🍿 HBM PMX Package	01/10/2013		No license required				Details
								Updates Search updates Download



# **Creating a project**

-

Select File – New Project – Standard Project.

As device type select "CODESYS Control HBM PMX V3":

Standard Project         You are about to create a new standard project. This wizard will create the follow objects within this project:         One programmable device as specified below         A program PLC_PRG in the language specified below         A cyclic task which calls PLC_PRG every 20 milliseconds         A reference to the newest version of the Standard library currently installed.         Device:       CODESYS Control HBM PMX V3 (3S - Smart Software Solutions GmbH)								
6	You are about objects within	t to create a new standard project. This wizard will create the followin n this project:	Ig					
	- One program - A program F - A cyclic task - A reference	nmable device as specified below PLC_PRG in the language specified below which calls PLC_PRG every 20 milliseconds to the newest version of the Standard library currently installed.						
	Device:	CODESYS Control HBM PMX V3 (3S - Smart Software Solutions GmbH)	•					
	PLC_PRG in:	Structured Text (ST)	•					
		OK Cano	;el					

- After the project is created, double click on "Device (CODESYS Control HBM PMX V3)".
   Add a gateway in the communications settings if necessary. (The gateway type is generally "TCP/IP" if PMX is connected with the PC via Ethernet. IP address: "localhost" or a fixed device address or PMX device name.)
- Mark the gateway entry and click "Scan Network". The target device should now be displayed. Double click to make it the active device.
- The program can be created under "PLC\_PRG (PRG)".

#### **Adding a PMX library**

- Double click on "Library Manager", then "Add Library". Under "Miscellaneous" select "HBM PMX Library"

Add Library	-	
Enter a string for a f	fulltext search in all libraries	
Company: (Al co	mpanies)	
(Miscellaneo	us)	
HBM PMXL	Jbrary HBM GmbH	
Use Cases		



- The library functions are permitted in online Help, for example

Name	Namensraum	Effektive Version				
Standard, 3.5.2.0 (System)	Standard	3.5.2.0				
🖬 · 🚥 IoStandard = IoStandard, 3.5.2.0 (System)	IoStandard	3.5.2.0				
🗄 📲 HBM PMX Library, 0.3 (HBM GmbH)	HBM_PMX_Library	0.3				
Eir	ngänge/Ausgänge Graph	isch Dokumentatio	on			
dearLimitSwitchFlag  dearLimitSwitchFlags	UNCTION clearLimits	witchFlag				
getCallErrorCount	Name	Datentyp	Geer	Ad	Ini	Kommentar
getLimitSwitchValue	V clearLimitSwitchFlag	DINT				
getSystemeventBool	🏘 nr	DINT				nr of limit switch flag to clear. Valid: 032
getSystemeventBoolCount						

#### **Task configuration**

The following task types can be selected under MainTask:

- Cyclic

The task is started asynchronously to the measured values. **The interval should be at least 4 ms**, which is the shortest possible resolution.

External – Measval Event

The task is started synchronously with the measured values. The frequency at which the task is called can be adjusted in the "System Options" dialog. Maximum: 2400Hz, default: 1200 Hz. At a sampling rate of 19200 Hz this means the task would be started after every 16th measured value.

	SYSTEM	M OPTIONS	*?
SETTINGS	VALUE	DESCRIPTIONS	
Maximum update rate	19200 Hz	The actual update rate per channel depends on the fitted cards	
Max. Update Rate	1200 Hz	This update rate influences all other update rates	
Update Rate f. Limits, Dig. I/Os	1200 Hz	This update rate depends on current system update rate	

#### - External – SystemEvent

The task is started when a PMX system event occurs (the events also appear in the system log of the device). The number of the event is returned in the task by the library function (getSystemeventNr). System events can be called from the browser using device path http://<name of pmx device>/data/systemevent.xml

If possible, select only these task types.

# **Cyclic data**

Cyclic data replaced with the PMX firmware appears as follows:

- Double click on the left side of project tree "Device (CODESYS Control HBM PMX V3)".

#### Select the "Internal I/O Mapping" tab.

Geräte 👻 🕂 🗙	Device 🗙 🧾 Ta	ask Configuration	🍪 Mair	Task	C_PRG	Bibliothe	eksverwalte	er		
🖃 🗿 Unbenannt1 💽	Kommunikationseinstellungen	Applikationen	Dateien Log	SPS-Einstellungen	SPS Shell	Benutzer und	Gruppen	Zugriffsrechte	Internal Konfiguration	Internal I/O Abbild T
Device (CODESYS Control HBM PMX V3)	Kanäle	Kanäle								
SPS-Logik	Variable	Variable Mapping		Kanal		Adresse Typ		Beschreibung		
= Q Application			DigitalOutou	te .	%ID0	DWORD		The digital (	outouts of the PMX PX8	78 if available First PX
Bibliotheksverwalter	1 - X		DigitalInputs		%ID1	DWORD		The digital i	nouts of the PMX PX878	if available. First PX8
PLC_PRG (PRG)			Slot1 Signal1		%ID2	REAL		The first sig	nal of the first meascar	d if available.
askkonfiguration			dia and					-	1 1 00 0 I	1.00 00.000



 To connect with an existing program variable of the same type, double click in the desired cell in the "Variable" column.

Kanäle								
Variable	Mapping	Kanal	Adresse	Тур				
<b>*</b>		Slot3 Signal2	%ID11	REAL				
🍫		Slot3 Signal3	%ID12	REAL				
Application.PLC_PRG.foo	🍾	Slot3 Signal4	%ID13	REAL				
*		Slot4 Signal1	%ID14	REAL				
		Slot4 Signal2	%ID15	REAL				

### WebVisu

CODESYS in PMX contains WebVisu. It can be used to view and control the process from a web page that users can personalize to suit their preferences. The web server runs in CODESYS in PMX.

- In the project tree, right click on "Application". Then "Add Object" "Visualization"
- Now graphical elements can be added and connected with program variables. Example:



After WebVisu is started in PMX, the web page of a browser can be reached at pmx:8080/webvisu.htm

"pmx" is the device name. It may have to be replaced by the actual device name or an IP address. "webvisu.htm" is the standard name in CODESYS. It can be changed in the Visualization Manager.

 WebVisu is linked by the PMX user interface via the CODESYS icon in the footer. The standard name "webvisu.htm" must be used for the link to work.



#### CAN

The device can be operated with Codesys as a CAN-Open slave or master. To do this, first a CAN component must be added, then a CAN-Open stack. The package included with delivery contains several relevant examples.



# TIP

Further information and help with creating Codesys programs is available in Codesys online Help, on the Internet at <a href="http://www.codesys.com/">http://www.codesys.com/</a> or in the Codesys chat room <a href="http://forum.codesys.com/">http://forum.codesys.com/</a> or in the Codesys chat room <a href="http://totune.codesys.com/">http://totune.codesys.com/</a> or in the Codesys chat room <a href="http://totune.codesys.com/">http://totune.codesys.com/</a> or in the Codesys chat room <a href="http://totune.codesys.com/">http://totune.codesys.com/</a> or in the Codesys chat room <a href="http://totune.codesys.com/">http://totune.codesys.com/</a>

Be sure to make use of the knowledge and information available in the Codesys Store. You'll find plenty of examples of programs and solutions there covering a wide range of tasks <a href="http://store.codesys.com/?">http://store.codesys.com/?</a> store=en& from store=default

#### Disclaimer

These examples are simply for the purpose of illustration. They cannot be used as the basis for any warranty or liability claims.