EasyPageMachine SOFTWARE-MANUAL DVS: 59512





EPAM4-Manual

Version: 1.1.15

© 2014 Grossenbacher Systeme AG

Grossenbacher Systeme AG Spinnereistrasse 10, CH-9008 St. Gallen Phone +41 (0)71 243 29 29 / Fax +41 (0)71 243 29 28 display@gesys.ch / w w w.gesys.ch Grossenbacher Systeme GmbH Feldwiesenstrasse 8, DE-79807 Lottstetten Phone +49 (0)7745 928 6971/ Fax +49 (0)7745 928 9559 sales.de@gesys.ch Keep documentation for future use!

This documentation is the intellectual property of Grossenbacher Systeme AG, which also has the exclusive copyright.

Any modification of the content, duplication or reprinting of this documentation, as well as any distribution to third parties can only be made with the express permission of Grossenbacher Systeme AG

Grossenbacher Systeme AG does not accept any liability for damages arising from the use of any incorrect or incomplete information contained in this documentation or any information missing therefrom.

Grossenbacher Systeme AG reserves the right to make complete or partial modifications to this document.

Symbols explaination



Warning of general hazard



Warning of electrical voltage



Components susceptible to damage from electrostatic charges. The opening of the housing or connections should only be carried out by trained personnel!



Notes

In case of a modification, the version of the entire document will be updated. All modifications are listed in the Version History section

Copyright © 2012 Grossenbacher Systeme AG Spinnereistrasse 10 CH-9008 St.Gallen Switzerland

Table of contents

I	Introduction	9
II	Operating principle	11
III	Installation	14
1	System requirements	1/
1		
2	Development environment (IDE)	
3	Runtime system (RTS)	
IV	For EPAM3 users	19
1	EPAM3 and EPAM4 installation	
2	New features of EPAM4	
2	EDAM2 unsupported features	20
3		
4	Migrating EPAM3 projects	
	Converting a project	
	New Init and Exit columns	
	Actions	
	System variables	
	Data types	
	Adapting objects	
	#AlarmList object	
	#Button object	
	#DataLog object	
	#HTMLBrow ser object	
	#Message object	
	#Meter object	
	#Passw ord object	
	#Recipe object	32 20
	#RemoteControl object	
	#Scrollist object	33
	#Signal object	
	#Sys2PLC object	
	#TextList object	
	#Variable object	
V	Project implementation	36
1	Summary of requirements	36
2	Structuring of screen pages	
3	Definition of screen page layout	36
4	Creating images	
5	Implementation with Excel	37
6	Documentation	37
7	Connection to the PLC	38

EPAM4-Manual

8	Tips for touch screen applications	
VI	Communication and variables	40
1	Communication driver	40
2	Variable names	
2	Dynamic variable names	11
5		
4	System variables	41
	APP	
	SYS	
	TMP	
	USR	
VII	Development environment (IDE)	48
1	Toolbar	48
	Project	
	New	
	Settings	
	Communication settings	
	РсН	
	Rs7	
	ADS	
	MIF	
	Scale	
	Convert	
	Archive	
	Start	
	Views	
	Fonts menu	00
	Tools	
	Help	
2	Worksheets in EXCEL	73
-		74
	Font column	
	Columns X, Y, DX, DY	
	Color. Backcolor columns	
	Format column	
	Action column	
	Limit1, Limit2 columns	
	ActionLimit1, ActionLimit2 columns	
	VarValue column	
	VarType column	
	VarState column	
	Option column	
	Function column	
	Init, Exit columns	
	AdsHosts table	
	Alarm worksheet	
	AlarmList worksheet	
	Authent Worksneet	
	AuthentPoles worksheet	
	National og workshoot	
	Databoy worksheet	

 ${\small ©}$ 2014 Grossenbacher Systeme AG

	DrvParam worksheet	87
	FontMap worksheet	87
	Message worksheet	89
	MiifHosts worksheet	89
	PicHosts worksheet	89
	RS7Hosts worksheet	91
	Sworksheet	
	StyleSheet worksheet	
	Sys2PLC worksheet	93
	Text worksheet	93
	Trend worksheet	
	UserColor worksheet	
	UserVar worksheet	95
	VBar worksheet	96
	VMeter worksheet	96
	LogView worksheet	
	UserList worksheet	
	RoleList worksheet	
	RecipeList worksheet	
3	Language-dependent worksheets	
4	Password protecting an EPAM project	97
5	Context menu	
6	Page Designer	00
U		
VIII	Objects	106
1	Container definitions	106
	\$Group	
	\$Scrollist	108
	\$Scrollist \$Scrollist2	
2	\$Scrollist \$Scrollist2 Containers	
2	\$Scrollist \$Scrollist2 Containers	
2	\$Scrollist \$Scrollist2 Containers #Group #Page	
2	\$Scrollist \$Scrollist2 Containers #Group #Page #Scrollist	
2	\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist #Scrollist2	
2	\$Scrollist \$Scrollist2 Containers	
2 3	\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist2 Globals. Alarm	
2 3	\$Scrollist	
2 3	\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist #Scrollist2 Globals. Alarm Definition. Alarm handling procedure.	108 109 111 111 113 113 116 118 119 120 122 124
2 3	\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist #Scrollist2 Globals. Alarm Definition. Alarm handling procedure. Alarm acknow ledgement	108 109 111 111 113 113 116 118 119 120 122 124 124
2 3	\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist #Scrollist2 Globals. Alarm Definition Alarm handling procedure. Alarm acknow ledgement. Alarm display	108 109 111 111 113 113 116 118 119 120 122 124 124 124
2 3	\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist #Scrollist2 Globals. Alarm Definition Alarm handling procedure. Alarm acknow ledgement. Alarm display. Exporting the alarm history.	108 109 111 111 113 113 116 118 119 120 122 124 124 124 124
2 3	<pre>\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist #Scrollist2 Globals. Alarm Definition Alarm handling procedure Alarm acknow ledgement. Alarm display Exporting the alarm history. Authent</pre>	108 109 111 111 113 114 113 116 118 119 120 122 124 124 124 124 124 124
2 3	\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist #Scrollist2 Globals. Alarm Definition. Alarm handling procedure. Alarm acknow ledgement. Alarm display. Exporting the alarm history. Authent Definition.	108 109 111 111 113 113 116 118 119 120 122 124 124 124 124 124 124 124 125 126
2 3	\$Scrollist \$Scrollist2 Containers	108 109 111 111 111 113 116 118 119 120 122 124 124 124 124 124 124 124 124 125 126 128
2 3	<pre>\$Scrollist\$Scrollist2 Containers #Group#Group#Page #Scrollist#Scrollist#Scrollist2 Globals Globals Alarm Definition</pre>	108 109 111 111 111 113 113 116 118 119 120 122 124 124 124 124 124 124 124 124 124
2 3	\$Scrollist \$Scrollist2 Containers. #Group #Page #Scrollist #Scrollist Scrollist2 Globals. Globals. Alarm Definition. Alarm handling procedure. Alarm acknow ledgement. Alarm display. Exporting the alarm history. Authent Definition. AuthentRoles. AuthentPassw d. Errors.	108 109 111 111 113 113 116 118 119 120 122 124 124 124 124 124 124 124 124 124
2 3	<pre>\$Scrollist \$Scrollist2</pre>	108 109 111 111 111 113 113 116 118 119 120 122 124 124 124 124 124 124 124 124 124
2 3	<pre>\$Scrollist \$Scrollist2</pre>	108 109 111 111 113 113 116 118 119 120 122 124 124 124 124 124 124 124 124 124
2 3	\$Scrollist \$Scrollist2	108 109 111 111 111 113 116 118 119 120 122 124 124 124 124 124 124 124
2 3	<pre>\$Scrollist</pre>	108 109 111 111 111 113 116 118 119 120 122 124 124 124 124 124 124 124
2 3	<pre>\$Scrollist</pre>	108 109 111 111 111 113 116 118 119 120 122 124 124 124 124 124 124 124
2 3	<pre>\$Scrollist \$Scrollist2</pre> Containers. #Group #Page #Scrollist	108 109 111 111 111 111 113 114 114 114 114 114
2	<pre>\$Scrollist \$Scrollist2</pre> Containers	108 109 111 111 111 113 116 118 119 120 122 124 124 124 124 124 124 124
2 3	<pre>\$Scrollist</pre>	108 109 111 111 111 113 116 118 119 120 122 124 124 124 124 124 124 124

	AlarmList	143
	Definition	147
	Bar	149
	Button	152
	Calendar	166
	Definition	
	DiagSig	
	DropDownList	
	Message	
	Meter	
	Mivility	
		100
	PadioButton	
	Remote Control	
	Rolel ist	197
	Definition	198
	Signal	
	Slider	
	Switch	
	- Textlist	
	Trend	
	Trend definition	
	UserList	215
	Definition	
	Variable	218
	Unit systems	225
	VBar	227
	VBar definition	229
	VMeter	232
	VMeter definition	235
IX	Quick start	240
1	Opening a new project	
2	Defining screen pages and objects	240
3	Defining object properties	242
٨	Simulating the application on the development PC	242
-		
5	Importing variables	243
6	Compiling the project and loading onto the target system	244
Χ	НоwТо	247
		o
1	AM/PM time system	
2	Alarm simulation	248
XI	Runtime errors	250
XII	Glossary	261
XIII	Support	264

 ${\small ©}$ 2014 Grossenbacher Systeme AG

	Table of contents	7
XIV Version history		266
Index		268



1 Introduction

This manual describes the use of the EPAM4 visualization system.

What is EPAM?

- The Easy Page Machine (EPAM) visualization system is specially designed for graphical user guidance with touch functionality.
- The visualization screens are configured in an EXCEL spreadsheet
- EPAM comes with a wide range of objects and functions for creating sophisticated visualization projects.
- \checkmark Password protection
- ✓ Recipe management
- ✓ Alarm archive
- ✓ Data logger
- \checkmark Curves and bar graphs
- ✓ Various input objects such as Button, Switch, Variable, RadioButton,...
- ✓ Various display objects such as Signal, Meter,...
- ✓ Connection to different controllers such as Codesys, Siemens S7, ...
- ✓ Simulation on the development PC

What is EPAM4 ?

EPAM4 is the new 4th generation of the **Easy PageMachine** visualization tool. In order to meet the requirements of the next 10 years, *EPAM4* has been completely redesigned.

The user and his requirements for faster project development are the major focus of the development. The implementations include functions such as libraries, group objects - consisting of any combination of individual objects - full Unicode support, True color support with transparency and much more. This improves reusability of projects and part projects, which considerably reduces project design effort and simplifies maintenance.

The user also benefits from the full Unicode support which simplifies the handling of international fonts.

The proven basis for all these new features continues to be the <u>EXCEL</u> development environment! See: <u>New features of EPAM4</u>

The <u>EPAM4 Runtime System</u> is based on the <u>Qt-Framework</u> which allows the simple porting from Windows (CE) to Linux or Mac-OS systems! This ensures future investment security for the user. The consistent object-oriented structure provides the basis for greater functionality in less time!

The latest versions of EPAM4 are available via the Internet from the EPAM Homepage <u>www.</u> <u>easypagemachine.com</u>.

Additional documentation

Additional documentation on the operating systems and devices of Grossenbacher Systeme AG are available for download from <u>www.gesys.ch</u>.

- WindowsCE system description
- WindowsXP / XP embedded system description
- Codesys Soft-PLC system description
- AT-S7 Soft-PLC system description
- Device descriptions such as EP-370, SP-240



2 Operating principle

The EPAM-RTS is an interpreter, i.e. the <u>objects</u> and screen pages are defined in a structured, tabular text file (so-called script file) and are converted by RTS into a graphic output (similar to an Internet browser). The script file contains the definitions of the individual screen pages and the objects they contain, and is created with Excel. Graphics are created in <u>EPAM4 image format</u> with a standard graphics program and are referenced by their file names in the script file. The same principle applies to the font files.



When EPAM (<u>Simulation</u>) is launched, the Excel worksheet is saved as a Unicode text file. This enables project data to be independent of the Excel version used.

Benefits of this concept

- Simple screen page creation and object definition with Excel
- Transparent, readable database
- Supports different hardware platforms (1/4 VGA 320x240, 640x480, 800x600 to 1280x1024 with 16 million colors)
- · Integrated communication to the PLC via symbolic names
- Freely selectable colors and fonts
- Online language selection, also Unicode (e.g. Chinese characters)
- No expensive Windows development environment

Why EXCEL?

In visualization applications, a large number of lists, such as alarm lists, text lists, variable lists etc. always have to be managed. Using a standard software package like Excel that is specially developed for these types of tasks is therefore a logical step.

Benefits of Excel

- Straightforward screen display and printout (project documentation)
- Existing objects and entire screen pages can be copied easily, also from other projects
- Formulae and automatic filling of cells possible by dragging

- Simple and fast modifications possible with Find/Replace
- The use of Excel VSTO or macros enables applications to be designed to customer requirements and further developed as required, e.g. the connection to a database for managing multilingual texts etc.
- Input tools and project testing tools directly accessible from Excel, by simply clicking
 predefined icons in the EPAM4 tab or via the <u>context menus</u>

Launching EPAM simulation

You can launch EPAM directly from the Excel user interface in the EPAM4 tab by clicking <u>Simulation</u> and you can exit the simulation by pressing the ESC key at any time.



3 Installation

EPAM4 consists of the development environment (IDE) and the runtime system (RTS).

The *IDE* is installed on the development PC. The *RTS* is installed on the target system.

The system requirements and the installation of these components are described below.

3.1 System requirements

Requirements of the development system

- IBM-compatible PC
- Windows XP, Vista or 7
- Office/Excel 2007 or newer
- Graphics program for creating <u>pictures</u> e.g. <u>XnView</u>, <u>Gimp</u>, <u>PhotoShop</u>, <u>Microsoft Paint</u> or similar.

Requirements of the target system

- Devices of the EP-370 series (WindowsCE6/XP or 7)
- Devices of the <u>SP-240 series</u> (WindowsCE6)

3.2 Development environment (IDE)

Executing the installation program

Running the *SetupEPAM4* <version>.exe installation program will install the entire *IDE* in the specified directory



Administrator rights are required for the installation.

Prerequisites

The following components are required for the *IDE* and are loaded automatically from the Internet and installed during the installation process.

- Windows Installer 3.1
- .NET Framework 4.0 Client
- Visual Studio 2010 Tools for Office Runtime (VSTO)
- <u>Microsoft Visual C++ 2005 Redistributable</u>



- These components must be installed manually beforehand if there is no Internet connection available.
- The installation is always carried out for all users. However, the Excel add-in must be installed separately for every additional user. For this it must be carried out via the Start menu " *Grossenbacher/EPAM4/Install AddIn"*. Administrator rights are not required for this purpose. This procedure has to be repeated after each update.

f	Grossenbacher •	m	EPAM V3.50			E
6	Help & Manual 5	m	EPAM4) 😫) Help	
Image: A start of the start	High-Logic FontCreator	_		89A	Uninstall EPAM4	
Image: A start of the start	IcoFX 1.6			1	RemoteControl	
Image: A start of the start	Inno Setup 5				EPAM4	
(iii)	Macromedia 🕨				Install Addin	

Updates

The latest versions of EPAM4 can be downloaded from the Internet from the EPAM home page at <u>www.easypagemachine.com</u>.

Launching Excel

If Excel has started after a successful installation, the **EPAM4** tab appears in the menu bar at the top right.

Licensing

Without a valid license the IDE is a fully functional trial version for 30 days. See <u>licensing</u> for more details!

EPAM4IDE deactivated

If the the EPAM4 tab doesn't appear, the EPAM4IDE AddIn has probably been deactivated.

Check the following setting if the **EPAM4** tab is not displayed:

- Excel Options/Add-Ins Select COM Add-Ins in the Manage box and click Go
- The Add-Ins available list should display EPAM4IDE. If necessary this must be activated manually



If the AddIn remains deactivated delete the corresponding registry under:

HKEY_CURRENT_USER\Software\Microsoft\Office\12.0\Excel\Resiliency\DisabledItems

3.3 Runtime system (RTS)

The RTS is normally preinstalled on the device.

If required, the runtime system can be installed on the target device (*Target*) using the *SetupTargetFirmwareEPAM4* <version>.exe utility. (e.g. Update)

Target

The installation program contains the firmware for different targets. It is therefore necessary to define the installation target during the installation.

🔂 Setup - TargetFirmwareEPAM4		
Target Type Select Target Type		
Please specify the Target Type, then click N	Vext.	
EP-370 (WCE6-x86)		
C SP-240 (WCE6-Arm)		
English		
www.gesys.ch	< <u>B</u> ack <u>N</u> ext >	Cancel

Installation type

The following installation types can be selected:

🕞 Setup - TargetFirmwareEPAM4			
Installation Type Select Installation Type			
Please specify the Installation Type, then o	lick Next.		
FTP Installation			
Compact Flash/SD Card Installation			
Installation to a Local Directory			
English			
www.gesys.ch	< <u>B</u> ack	Next >	Cancel

• FTP The target firmware is loaded directly onto the device via FTP

Requirement:

- Ethernet connection to the device
- > FTP server configured (see also Control Panel Gesys Options FTP)
- CF/SD Card The target firmware is copied to a CF/SD card
- Local The target firmware is copied to a local directory and can then be loaded manually onto the device

Runtime system for devices with WindowsCE

The RTS is normally installed at \StorageCard\EPAM4.

The file version.html contains a list of all installed components with the version information.



4 For EPAM3 users

- New features of EPAM4
- Parallel Installation of EPAM3 and EPAM4
- <u>Migration of EPAM3 projects</u>
- <u>Unsupported EPAM3 features</u>

4.1 EPAM3 and EPAM4 installation

EPAM3 and EPAM4 can be installed at the same time. However, this requires EPAM3 V3.50 to be installed. This version prevents any EPAM3 macros from being accidentally executed in an EPAM4 project. EPAM V3.50 checks the project version and only allows EPAM macros that are also compatible with EPAM4.

The following EPAM3 macros can also be used with EPAM4:

- EPAM Wizard
- Project comparison
- Language tools, Project, Alarm, Message worksheets compatible with EPAM4
- · Goto Page

Onfortunately, the EPAM4 has an negative impact to EPAM3 Build speed.

If you work for a longer period with EPAM3, it's worth to temporarily disable the EPAM4IDE COM-Add-In.



4.2 New features of EPAM4

Some of the new features in EPAM4

- Simpler operation of the development environment through improved integration in <u>EXCEL</u> (VSTO Addln)
- TrueColor support with transparency (alpha channel)
- New <u>picture formats</u> JPG, BMP, PNG with transparency, GIF and SVG (vector-based). The existing PCX format (*.PCX and *.ICO) is likewise supported.
- Objects with a transparent background (incl. #Pages)
- Improved display through anti-aliasing, e.g. with meter object
- Init / Exit actions on screen page changes
- The Group object (<u>#Group</u>) can combine any EPAM objects. This increases re-usability and reduces project size (normally 50% compared to EPAM3)
- Fully Unicode based (e.g. input and output of Chinese characters)
- Dynamic objects. Object attributes such as position, dimension, colors,.... can be changed

dynamically via variables

- Optimized project download. The entire project is compressed and transferred in one file.
- Software protection for the project on the target. The project is available in compressed form in a file. Pictures and contents can thus no longer be copied easily.

Benefits for the user

- Fast project design through greater re-usability, more ergonomic development environment, faster download
- Improved appearance of the application through flicker-free and faster picture creation
- · Simpler creation of "design user interfaces" with transparent images and color gradients
- · Simpler creation of international applications through full Unicode support
- Online Help

4.3 EPAM3 unsupported features

Feature	Comment
Backup of recipe files	Not implemented
Objects	see Adaption of objects

4.4 Migrating EPAM3 projects

Existing EPAM3 projects can be converted to EPAM4 with a few adaptions. The steps required are described in the following.

4.4.1 Converting a project

The <u>Convert Project</u> function converts an existing EPAM3 project to an EPAM4 project. Additional manual adaptions must then be carried out.

4.4.2 New Init and Exit columns

An EPAM4 project has two additional columns U: Init and column V: Exit: which must be added to the right of the Function column. (see also <u>Structure of the Excel spreadsheet</u>)

Function	Init	Exit	Comments

4.4.3 Actions

Many actions from EPAM3 are also included in EPAM4. Some actions have become obsolete, new ones have been added and some have been given new names. The following table shows a comparison of the actions:

	EPAM3		EPAM4	
Categor				
у	Action	Comment	Action	Comment
General	#Page= <name></name>	Page change to page name	#Page= <name></name>	
General	#PagePrev	Page change to previous page		not implemented
General	#PageHome	Page change to 1st page (start page)	PageHome	
General	Close	Close page (window)	Close	
General	Close= <name></name>	Close page (window) name	Close= <name></name>	
General	<i>EjectVolume</i> (Drive #Page= <eject_fail< td=""><td>Logging off a removable memory (e.g. USBMemorystick; only</td><td><i>EjectVolume(</i> Drive <i>;#page=</i> <eject_failed> <i>;</i></eject_failed></td><td>Arguments must be separated by a semicolon</td></eject_fail<>	Logging off a removable memory (e.g. USBMemorystick; only	<i>EjectVolume(</i> Drive <i>;#page=</i> <eject_failed> <i>;</i></eject_failed>	Arguments must be separated by a semicolon

	ed> #Page= <eject_ok< td=""><td>Windows)</td><td>#page= <eject_succeede< td=""><td></td></eject_succeede<></td></eject_ok<>	Windows)	#page= <eject_succeede< td=""><td></td></eject_succeede<>	
Conorol	>) Evit	Evit program	d>)	
General	EXIL FileConv(dot=		EXIL FiloCopy(dot-	
General	<pre><pre><pre>copy(dst= <pre><pre><pre>copy(dst= <pre>src=<path\file. ext=""> #Page= <copy_err> #Page= <copy_ok>)</copy_ok></copy_err></path\file.></pre></pre></pre></pre></pre></pre></pre>		<pre><filepath> src= <filepath> src= <filepath> #Page= <copy_err> #Page= <copy_ok>)</copy_ok></copy_err></filepath></filepath></filepath></pre>	
General	Key= <keycode></keycode>	Send a key code	Key= <keycode></keycode>	
General	Language=default	Online language selection to default language	Language=default	System variables are saved implicitly
General	<i>Language</i> = <name></name>	Online language selection to language name	<i>Language</i> = <name></name>	System variables are saved implicitly
General	<i>PlcCmd</i> =[[/ <driver>/] [<host>]: Command</host></driver>	Trigger PLC command	PlcCmd=/ <drv>/ <host>: {Stop\Start\Reset Warm\ResetCold\ ResetOriginal\Cre ateBootProject}</host></drv>	
General	PrintScreen	Output screen content to standard printer (only Windows)		not implemented
RemoteC ontrolSer ver	rcinput_enable=ye s	Enable RemoteControl input	RemoteControl: input.enable	
RemoteC ontrolSer ver	rcinput_enable=no	Disable RemoteControl input	RemoteControl: input.disable	
General	RemoteClient=dro p	Closes all remote client connections	RemoteControl: connection.drop	
General	Reboot	Restart the system	Reboot	
General	SetIndex	Indirect setting of index variables for indexed variable access		unnecessary
General	SetIndex= <x></x>	Direct setting of index variables for indexed variable access		unnecessary
General	SetVar= <x></x>	Set VarValue to x (strings must be defined in closed single apostrophes, e.g. 'String') x can also be the name of a system variable	SetVar= { <constant>¦<vari able>}</vari </constant>	
General	SetVar+ <x></x>	Increment VarValue by x	SetVar+{ <consta nt>¦<variable>}</variable></consta 	
General	SetVar- <x></x>	Decrement VarValue by x	SetVar- { <constant>¦<vari able>}</vari </constant>	
General			SetVar: <variable1>= {<constant>¦<vari able2>}</vari </constant></variable1>	New
General	SetVar=NotVar	Invert variable value (0/1)	SetVar=NotVar	

General	al System= <myprg. an="" call="" exe="" executable="" file="" of=""></myprg.>		System= <executa ble> [-d <working directory>]</working </executa 	
General	Msg= <x></x>	Output message with number x	SetVar: <variable>=<x></x></variable>	replaced With the <u>#Message</u> object <variable> is configured as VarValue</variable>
General	PWL= <x></x>	(Re)set password level to x	PWL= <level></level>	
General	TipVar= <x></x>	Set variable value to x as long as button is pressed. The variables is then reset to 0	TipVar= <x></x>	
General	eneral <i>unit=<index></index></i> Unit system conversion		unit= <index></index>	(see <u>Unit systems</u>)
System	Touch_calibrate	Calibrate resistive touch	Touch_calibrate	
System	Backlight= <x></x>	Set backlight to x (0-100%)		SetVar= to /S/ APP/Backlight
System	Backlight+ <x></x>	Increment backlight by x		SetVar+ to /S/ APP/Backlight
System	Backlight- <x></x>	Decrement backlight by x		SetVar- to /S/APP/ Backlight
System	CFGINI=Read	Read IP configuration	lpParam:Get	
System	CFGINI=Write	Write IP configuration	lpParam:Set	
System	Contrast= <x></x>	Set contrast (0-100%) (only passive LCD)		
System	Contrast+ <x></x>	Increment contrast by x (only passive LCD)		
System	Contrast- <x></x>	Decrement contrast by x (only passive LCD)		
System	GetDT	Update all RTC system variables s_tm_day,s_tm_mon, etc.		unnecessary, are always updated
System	Save=SysVar	Save system variables in sysvar.ini	VarPool: sysvarsave	
System	SetDate	Set system time (values are transferred from RTC system variables)	SetDateTime	Set date and time
System	SetTime	Set system date (values are transferred from RTC system variables)	SetDateTime	Set date and time
Scrollist	Scrollx= <x></x>	Move objects in scroll list horizontally by x pixels		
Scrollist	Scrolly= <x></x>	Move objects in scroll list vertically by x pixels		
Alarm	AlarmDelete	Delete alarm history	Alarm:delete	
Alarm	AlarmExport=CSV	Alarm history is saved as a CSV file in the EPAM data directory C:\DATA	Alarm:export=csv	
Alarm	AlarmType= <myal< td=""><td>Set alarm type of the alarm list</td><td>Alarm:</td><td></td></myal<>	Set alarm type of the alarm list	Alarm:	

	armtype>	(required as soon as several alarm objects were configured)	type= <type></type>	
Alarm list	AlarmFilter=activ	Set alarm filter: Display active alarms	AlarmList: filter=activ	
Alarm list	AlarmFilter=activ notquit	Set alarm filter: Display active or unacknowledged alarms	AlarmList: filter=activ notquit	
Alarm list	AlarmFilter=activ+ notquit	Set alarm filter: Display active and unacknowledged alarms	AlarmList: filter=activ+notqui t	
Alarm list	AlarmFilter=all	Set alarm filter: Display all alarms	AlarmList:filter=all	
Alarm list	AlarmFilter=notqui t	Set alarm filter: Display unacknowledged alarms	AlarmList: filter=notquit	
Alarm list	AlarmInfo=1	Call alarm info1 of the selected alarm	AlarmList:info=1	
Alarm list	AlarmInfo=2	Call alarm info2 of the selected alarm	AlarmList:info=2	
Alarm list	AlarmQuit	Acknowledge selected alarm individually	AlarmList:quit	
Alarm	AlarmQuitall	Acknowledge all alarms	Alarm:quitall	
Alarm list	AlarmSort=FIFO	Sort alarm in alarm list: Oldest alarm first	AlarmList: sort=FiFo	
Alarm list	AlarmSort=LIFO	Sort alarm in alarm list: Newest alarm first	AlarmList: sort=LiFo	
Alarm list	AlarmSort=Priority	Sort alarm in alarm list: Alarm with high priority (=low alarm number) first	AlarmList: sort=Priority	
Recipe list	Csave=list	Save element from recipe list (e.g. myRecipeType), with prompt if file exists (see Recipe object)	RecipeList:csave	
Recipe	Csave= <myrecipet ype></myrecipet 	Save recipe type (e.g. myRecipeType) with prompt if file exists, the file name is taken from the system variable 's_myrecipetype_file'	Recipe:[<type>]. csave</type>	
Recipe list	Delete=list	Delete element from recipe list (e.g. myRecipeType)	RecipeList:delete	
Recipe	Delete= <myrecipet ype></myrecipet 	Delete recipe type (e.g. myRecipeType), the file name is taken from the system variable 's_myrecipetype_file'	Recipe:[<type>]. delete</type>	
Recipe	Load_dat=LW:	Load all recipe files *.DAT from drive LW:		
Recipe list	Load=list	Load element from recipe list (e.g. myRecipeType)	RecipeList:load	
Recipe	Load= <myrecipety pe></myrecipety 	Load recipe type (e.g. myRecipeType), the file name is taken from the system variable 's_myrecipetype_file'	Recipe:[<type>]. load</type>	
Recipe	Load= <filepath></filepath>	Load recipe file (e.g. C: \DATA\MYTYP1\REC1.DAT)	Recipe:[<type>]. load=<filepath></filepath></type>	

Recipe list	Save_dat=LW:	Copy all recipe files *.DAT to drive LW:		
Recipe	Save=list	Save element from recipe list (e.g. myRecipeType), existing files are overwritten	RecipeList:save	
Recipe	Save= <myrecipety pe></myrecipety 	Save recipe type (e.g. myRecipeType), existing files are overwritten, file name and recipe name are taken from the system variables 's_myrecipetype_file' and 's_myrecipetype_name'	Recipe:[<type>]. save</type>	
Recipe list	Sort=File	Sort recipe list by file name	RecipeList: sort=file	
Recipe list	Sort=Name	Sort recipe list by recipe name	RecipeList: sort=name	
Recipe list	Sort=Number	Sort recipe list by recipe name numerically		not implemented
Recipe list	Sort=Time	Sort recipe list by time	RecipeList: sort=time	
Recipe list	Sort=Type	Sort recipe list by recipe type		Recipe list can only display one type
Recipe	Type= <myrecipety pe></myrecipety 	Set recipe type (e.g. myRecipeType)	Recipe:Type= <type></type>	equal to: S <i>etVar</i> = <type> to / S/APP/Recipe: Type</type>
Recipe	Type=off	Reset recipe type (all)	Recipe:Type=	equal to: SetVar=" to /S/ APP/Recipe:Type
DataLog	LogDelete= <mydat alog></mydat 	Delete data log file in LOG directory	Datalog: [<name>].delete</name>	
DataLog	LogSave= <mydata log></mydata 	Save data log file in DATA directory	Datalog: [<name>].save</name>	
Trend	Save_log=LW:	Copy all data log files *.DAT to drive LW:		
Trend	Online	Switch trend to online mode	Trend:online	
Trend	ShiftCursor= <x></x>	Scroll trend by +/-x data points.	Trend: ShiftCursor <offse t></offse 	
Trend	ShiftGrid= <x></x>	Scroll trend by +/-x time units	Trend: ScrollGrid <offset ></offset 	
Trend	ShiftPage= <x></x>	Scroll trend by +/-x pages	Trend: ScrollPage <offset ></offset 	
Trend	Zoom-	Zoom trend (reduce time axis resolution by one unit)	Trend: ZoomXGrid-1	
Trend	Zoom+	Zoom trend (increase time axis resolution by one unit)	Trend: ZoomXGrid+1	
Trend	ZoomX-	Zoom trend (reduce X axis resolution by one unit)	Trend: ZoomXGrid-1	

Trend	ZoomX+	Zoom trend (increase X axis resolution by one unit)	Trend: ZoomXGrid+1	
Trend	ZoomY-	Zoom trend (reduce Y axis resolution by one unit)		
Trend	ZoomY+	Zoom trend (increase Y axis resolution by one unit)		

4.4.4 Variable names

Variable names in EPAM4 must be defined with a full name /<Driver>/<Host>/<Variable>.

The ARTI communication driver in EPAM3 was replaced by the so-called <u>PLCH</u> (in <u>DRVparam</u>). The PLC handler supports communication to Codesys V2.3 and V3 controllers. The hosts (communication channels) are configured in the same way as with EPAM3.

All variable names must then be adapted as follows:

- 1. Delete Table UserVar
- 2. Replace <Host>/, or /ARTI/<Host>/ with /PLCH/<Host>/ (entire workbook)
- 3. Execute Build

The RTS reports errors in the resolution of variable names with Runtime Error

4.4.5 System variables

System variables in EPAM4 are defined with <u>/S/<Host>/<Name></u>. The EPAM3 system variables s_<name> must be replaced as follows:

EPAM3	Meaning	Data type	EPAM4	TYPE	Comment
s_alarm_active	Variable is set if alarms are active	INT	/S/SYS/Alarm [<name>].Active</name>	BOOL	
s_alarm[<name>]. active_count</name>	Number of active alarms	INT	/S/SYS/Alarm [<name>].ActiveCount</name>	WORD	
s_alarm_info	Name of the configured screen page of the Alarminfo action of the last alarm selected in the alarm list	STRING	/S/SYS/AlarmList [<name>].INFO</name>	WSTRIN G	
s_alarm_nr	Alarm number of the alarm last selected in the alarm list	WORD	/S/SYS/AlarmList [<name>].NR</name>	DWORD	
s_alarm_text	Alarm text of the alarm last selected in the alarm list	STRING	/S/SYS/AlarmList [<name>].TEXT</name>	WSTRIN G	
s_alarm_tin	Time alarm "Come" of the alarm last selected in the alarm list	STRING	/S/SYS/AlarmList [<name>].TIN</name>	WSTRIN G	
s_alarm_tin_dt	Time alarm "Come"	IEC_DT	/S/SYS/AlarmList	DT	

	of the alarm last selected in the alarm list		[<name>].TIN_DT</name>		
s_alarm_tout	Time alarm "Go" of the alarm last selected in the alarm list	STRING	/S/SYS/AlarmList [<name>].TOUT</name>	WSTRIN G	
s_alarm_tout_dt	Time alarm "Go" of the alarm last selected in the alarm list	IEC_DT	/S/SYS/AlarmList [<name>].TOUT_DT</name>	DT	
s_alarm_tquit	Time alarm "Acknowledged" of the alarm last selected in the alarm list	STRING	/S/SYS/AlarmList [<name>].TQUIT</name>	WSTRIN G	
s_alarm_tquit_dt	Time alarm "Acknowledged" of the alarm last selected in the alarm list	IEC_DT	/S/SYS/AlarmList [<name>].TQUIT_DT</name>	DT	
s_alarm_txtinfo	Variable with the name of the ASCII text file with the alarm specific text information (used with text list)	STRING	/S/SYS/AlarmList [<name>].TXTINFO</name>	WSTRIN G	
s_alarm_type	Variable with the name of the alarm type (used with several alarm objects)	STRING	/S/APP/Alarm:Type	WSTRIN G	
s_backlight	Actual setting of the backlight (0-100%, default: 100%)	WORD	/S/APP/Backlight	WORD	
s_contrast	Actual setting of the contrast (0-100%, default: 50%) Only passive LCDs!	WORD			Removed completely
s_dbconnection	DB connection status: 0 = not connected; 1 = connected	INT			Removed completely
s_dbpasswd_chang	DB password	INT			Removed completely
s_dbpasswd_expire s	DB password, days to expiry (default value = 0xFFFFFFF)	DWOR D			Removed completely
s_dbpasswd_login_ err	DB login status:	INT			Removed completely
s_dbpasswd_name	DB user name	STRING			Removed completely
s_dbpasswd_pw	DB password	STRING			Removed completely

s_dbpasswd_pw1	DB new password	STRING			Removed completely
s_dbpasswd_pw2	DB new password	STRING			Removed
s_dhcp_mode	0 = DHCP disabled, static IP address	INT	/S/SYS/Ethernet[0]. DhcpMode	STRING	
s_dns1_ip	DNS1 address of the target system (input in format xxx. xxx.xxx.xxx)	STRING	/S/SYS/Ethernet[0]. Dns1lpAdr	STRING	
s_dns2_ip	DNS2 address of the target system (input in format xxx. xxx.xxx.xxx)	STRING	/S/SYS/Ethernet[0]. Dns2lpAdr	STRING	
s_edit_val	Last value input	STRING	/S/SYS/Edit_Val	WSTRIN G	
s_epam_date	EPAM date (creation date)	STRING			Removed completely
s_epam_version	Current EPAM version	STRING	/S/SYS/RtsVersion	STRING	
s_gateway_ip	Current IP address of the gateway (input in format xxx. xxx.xxx.xx)	STRING	/S/SYS/Ethernet[0]. GatewaylpAdr	STRING	
s_helptext	Current Help text number	WORD	/S/SYS/HelpText	WORD	
s_input_val	Current input value	STRING			removed completely, see <u>#variable</u> option mirror
s_irtouch	1 with IR touch screen; 0 others	INT	/S/SYS/IrTouch	WORD	
s_language	Current Janquage	STRING	/S/APP/Language		
I				<u> </u>	
s_limit1	Current lower limit	STRING	/S/SYS/Limit1	WSTRIN G WSTRIN <u>G</u>	
s_limit1 s_limit2	Current lower limit value Current upper limit value	STRING	/S/SYS/Limit1 /S/SYS/Limit2	WSTRIN G WSTRIN G WSTRIN G	
s_limit1 s_limit2 s_myrecipetype _dnload_max	Current lower limit value Current upper limit value Number of recipe variables of the corresponding recipe type for download (the system variable is created for every defined recipe type)	STRING STRING WORD	/S/SYS/Limit1 /S/SYS/Limit2	WSTRIN G WSTRIN G	not implemented
s_limit1 s_limit2 s_myrecipetype _dnload_max s_myrecipetype_cur _file	Current lower limit value Current upper limit value Number of recipe variables of the corresponding recipe type for download (the system variable is created for every defined recipe type) Recipe file currently selected in the recipe list for each recipe type defined (without extension)	STRING STRING WORD	/S/SYS/Limit1 /S/SYS/Limit2 /S/SYS/RecipeList: SelectedFile	WSTRIN G WSTRIN G WSTRIN G	not implemented

	each recipe type defined				
s_myrecipetype_dnl oad_act	Current number of loaded recipe variables for download (the system variable is created for every defined recipe type)	WORD			not implemented
s_myrecipetype_file	Recipe file for each recipe type defined (without extension)	STRING	/S/APP/Recipe [<type>].file</type>	WSTRIN G	
s_myrecipetype_na me	Recipe name for each recipe type defined	STRING	/S/APP/Recipe [<type>].name</type>	WSTRIN G	
s_myrecipetype_upl oad_act	Current number of loaded recipe variables for (the system variable is created for every defined recipe type)	WORD			not implemented
s_myrecipetype_upl oad_max	Number of recipe variables of the corresponding recipe type for upload (the system variable is created for every defined recipe type)	WORD			not implemented
s_mytrend_c1	Current value at	As per	/S/SYS/Trend	As per	
		Trend	<pre>/S/SYS/Trend [<name>].c[<index>]. s</index></name></pre>	WSTRIN G	
s_mytrend_c2	Current value at cursor position	As per Trend			
s_mytrend_c3	Current value at cursor position	As per Trend			
s_mytrend_c4	Current value at cursor position	As per Trend			
s_newpage	New screen page name Setting this variable initiates a screen page change to screen page s_newpage	STRING	/S/SYS/NewPage	WSTRIN G	
s_pageidx	Current screen page ID (in conjunction with option ID)	UINT	/S/SYS/Pageld	WORD	
s_pagename	Current screen page	STRING	/S/SYS/PageName	WSTRIN G	
s_password	Current password entry	STRING	Any name	WSTRIN G	

s_password_x	Defined password	STRING	/S/APP/	WSTRIN	
	for authorization level x		Password_ <pwl></pwl>	G	
s_plcstate	Current status (1=Stop, 0=Run) of local controller	WORD			Removed completely
s_plcstate_ <hostna me></hostna 	Current status of (remote) controller <hostname></hostname>	WORD	Drv[<driver>][<host>]. state e.g. /S/SYS/Drv[Plch] [Plc1].state</host></driver>	WORD	
s_projectname	Current project name	STRING	/S/SYS/ProjectName	WSTRIN G	
s_projectprogramm er	Current project programmer	STRING	/S/SYS/ ProjectProgrammer	WSTRIN G	
s_projecttarget	Current project target system	STRING	/S/SYS/ProjectTarget	WSTRIN G	
s_projectversion	Current project version	STRING	/S/SYS/ ProjectVersion	WSTRIN G	
s_pwl	Current password level	WORD	/S/SYS/Pwl	WORD	
s_rc_password	Password for RemoteControl server	STRING	/S/SYS/Rc_Password	WSTRIN G	
s_recipe_path	Current directory path of all recipes	STRING	/S/APP/Recipe:Path	WSTRIN G	
s_recipe_type	Currently selected recipe type	STRING	/S/APP/Recipe:Type	WSTRIN G	
s_recipelist_empty	1 with an empty recipe list, 0 at least 1 recipe in the list	INT			not implemented
s_remoteclient_con nected	1 if access via RemoteClient active	INT	/S/SYS/RemoteClient. connected	INT	
s_subnetmask	Current subnet mask of the target system (input in IP format xxx.xxx.xxx)	STRING	/S/SYS/Ethernet[0]. SubnetMask		
s_target_ip	Current IP address of the target system (input in format xxx. xxx.xxx.xxx)	STRING	/S/SYS/Ethernet[0]. lpAdr	STRING	
s_tm_day	Day (1-31)	WORD	/S/SYS/tm_Day	WORD	
s_tm_hour	Hours (00-23)	WORD	/S/SYS/tm_Hour	WORD	
s_tm_isdst	s_tm_isdst > 0 … DST change	WORD			Removed completely
s_tm_min	Minute 0-59	WORD	/S/SYS/tm_Min	WORD	
s_tm_mon	Month (1-12)	WORD	/S/SYS/tm_Mon	WORD	
s_tm_nsec	Nominal seconds (00-59) for input	WORD	/S/SYS/tm_nSec	WORD	
s_tm_sec	Actual seconds (00- 59) for display	WORD	/S/SYS/tm_Sec	WORD	
s_tm_wday	Weekday (0-6; 0 =	WORD	/S/SYS/tm_wDay	WORD	

			/S/SYS/tm_yDay	WORD	Day of the year 0 - 365
s_tm_year	Year (1980-2099)	WORD	/S/SYS/tm_Year	WORD	
			/S/APP/ tm_UseAmPm	BOOL	affects /S/SYS/ tm_hour 0 = Hours 0-23 1 = Hours 0-11 (AM/PM)
			/S/SYS/tm_HourMax	WORD	Is set according to /S/APP/ Tm_UseAmPm 0->24¦1->12. Normally as Limit2 to input the time via /S/ SYS/Tm_hour.
			/S/SYS/tm_lsPM	BOOL	0 = 00:00-11:59 1 = 12:00-23:59
s_toucherror	0 o.k. 1 Touch test error (only IR touch)	INT	/S/SYS/TouchError	WORD	
s_trend_t	"Raw value" of the X position	DWOR D	/S/SYS/Trend [<name>].t</name>	DT	
s_trend_t_hour	Time at cursor position (hours)	DWOR D			Removed completely
s_trend_t_mday	Time at cursor position (day)	DWOR D			Removed completely
s_trend_t_min	Time at cursor	DWOR D			Removed completely
s_trend_t_mon	Time at cursor	DWOR D			Removed completely
s_trend_t_sec	Time at cursor	DWOR D			Removed completely
s_trend_t_sec	Time at cursor	DWOR D			Removed completely
s_trend_t_wday	Time at cursor	DWOR D			Removed completely
s_trend_t_year	Time at cursor	DWOR D			Removed completely
s_unit_idx	Current unit system	WORD	/S/APP/UnitIdx	WORD	(see <u>Unit</u> systems)
s_user_x	Defined user name for authorization level x	STRING	/S/APP/User_ <pwl></pwl>	WSTRIN G	Users per pwl
			/S/SYS/DateTime	DT	Current system time and date
s_user		STRING	/S/SYS/User	WSTRIN G	User for current
s_pwl_required		WORD	/S/SYS/PwlRequired	WORD	Required password level to operate actuated object.

s_pageid_last	WORD	/S/SYS/PageldLast	WORD	

4.4.6 Data types

The following data types must be replaced:

TIME

The TIME data type could be used in EPAM3 in conjunction with the <u>variable object</u> to display and transfer the time to the PLC.

The TIME data type is no longer supported in EPAM4 in this form and can be replaced by the IEC data type DT:

- Display The system variable <u>/S/SYS/DateTime</u> is available for this date/time:
- Write Use<u>Sys2Plc</u> date/time to PLC:

IEC_TIME

The IEC_TIME data type is replaced by TIME.

IEC_DT

The data type IEC_DT is replaced by DT.

4.4.7 Adapting objects

This chapter describes the differences between EPAM3 objects and EPAM4 and any adaptions necessary.

4.4.7.1 #AlarmList object

The #AlarmList object in EPAM4 supports the display of the alarms in a tabular form. The formatting must therefore be replaced by a worksheet definition.

See also

#AlarmList object

4.4.7.2 #Button object

Touch active fields

In EPAM4 touch active fields (button without image/text), must be defined with Backcolor transparent.

Positioning of the images

The images are positioned according to the format definition or the Pos=<position> option. EPAM4 no longer distinguishes between PCX and ICO format.

Parameters

- #PagePrev is currently not supported
- Option Scroll no longer required, see also <u>#Scrollist</u>
- Key=<keycode> option is currently not supported

See also

#Button

4.4.7.3 #DataLog object

In EPAM3 the DataLog variables were transferred in a structure. In EPAM4 individual variables are read from the PLC. The <u>DataLog definition</u> must be adapted and the PLC project may also have to be adapted in certain circumstances.

See also

#DataLog object

4.4.7.4 #HTMLBrowser object

The #HTMLBrowser object is currently not implemented but can largely be replaced by the <u>#TextList</u> object.

See also

#TextList object

4.4.7.5 #Message object

In EPAM4 the #Message object does not support any format placeholders with additional variable values.

See also

#Message object

4.4.7.6 #Meter object

In EPAM4 the <u>#Meter</u> object has two color definitions for scale color and meter fill color, separated by a comma.

See also

#Meter object

4.4.7.7 #Password object

Difference to EPAM3

- Calculation of the password from day and month (day * month + day) currently not implemented.
- SysPW=Off option not implemented

See also

#Password object

4.4.7.8 #Recipe object

The Filename=Auto and Filename=Auto10 options are currently not supported. Cascaded recipes are not yet supported. The EPAM3 format settings of the recipe list are not supported.

See also

#Recipe object

4.4.7.9 #RecipeList object

EPAM4 recipes are saved as XML files. Sort=Number, Sort=Type are not supported.

See also

#RecipeList object

4.4.7.10 #RemoteControl object

The following options are no longer supported: PROTO_NAME=RFB PROTO_MAJOR=3 PROTO_MINOR=3 PROTO_PORT=5900

See also

#RemoteControl object

4.4.7.11 #Scrollist object

The Scrollist is implemented in EPAM4 as a <u>Container object</u>. In other words, there is a scroll list definition <u>\$Scrollist=<name></u> which defines the scrollable objects and a declaration, #Scrollist =<name> in a page.

The <u>Scrollist</u> object can be adapted as follows:

- 1. Copy the entire area from the *#Page*=<name> page, starting with the *#Scrollist* object, to a separate area in front of the page
- 2. #Scrollist should then be written at the first line in this new area. Replace #Scrollist with \$Scrollist =<name>
- 3. All the subsequent objects now belong to the scroll list <name> and are moved together. The "scroll" option can be removed.
- 4. The position of all scroll objects is now referenced to the scroll object. The position of all objects must therefore be corrected accordingly.
- The scroll list now has a line height in pixels, that is specified in the cell Limit2. The number of lines is calculated automatically. The ScrollY=<x> action is no longer required and can be deleted.
- 6. In page #*Page*=<name>, all scroll objects (Scroll option) must now be deleted. For this the Scrollist object must be assigned the name of the newly defined scroll list. <u>#Scrollist</u>=<name>

Example

Scrollist definition

Object	Text/File	Font	Х	Y	DX	DY	Colo	Backcol	Format	Action	Limit	Limit
			[Pixel]	[Pixel]	[Pixel]	[Pixel]	r	or			1	2
\$Scrollist=scr oll1							black	w hite	Border=R1			50
#Button	myButton1	Arial12. FNT	0	0	100	50	black	grey	Border=Bu tton			
#Button	myButton2	Arial12. FNT	0	50		50	black	grey	Border=Bu tton			
#Button	myButton3	Arial12. FNT	0	100		50	black	grey	Border=Bu tton			

Scrollist declaration

Object	Text/File	Font	Х	Y	DX	DY	Colo	Backcol	Format	Action	Limit	Limit
			[Pixel]	[Pixel	[Pixel]	[Pixel]	r	or			1	2
#Page=List	List	Arial12. FNT	0	0	640	480	black	w hite	Border=R1			
#Button	х	Arial12.	530	5	100	50	black	w hite	Border=	#Page=		

	FNT						Button	start	
#Scrollist=scr	Arial12.	40	95	400	200	black			
oll1	FNT								i

See also

<u>\$Scrollist definition</u>

• #Scrollist object

4.4.7.12 #Signal object

Parameters

 The format Frame=<x> is no longer supported. Use Border=R<n> and Backcolor=transparent instead.

See also

#Signal object

4.4.7.13 #Sys2PLC object

In EPAM3 variables from the PLC were updated cyclically every 0.5 s. In EPAM4 updates are performed directly by the cycle of the communication driver.

In EPAM3 only system variables could be synchronized with PLC variables. In EPAM4 any variable can be synchronized.

The <u>Sys2PLC definition</u> must be adapted.

See also

#Sys2PLC object

4.4.7.14 #TextList object

Parameters

- The display of CSV files is no longer supported. These can be displayed as HTML files.
- The Format option is no longer necessary. Formatted continuous text is automatically displayed correctly.

See also

#TextList object

4.4.7.15 #Variable object

Parameters

- The following formats are currently not supported: %j, %U, %Z
- The Invisible format is no longer supported. (is no longer necessary)
- Mirror option replaces system variable s_input_val
- Unit conversion currently not implemented

See also

#Variable object



5 **Project implementation**

EPAM was developed in order to enable graphical user interfaces to be created as simply and quickly as possible. The project implementation procedure was therefore based on the "**fast prototyping**" method. In other words, a functional pattern is created and then tested immediately. This method effectively supports and promotes professional project handling (specifications, concept, implementation, commissioning, testing etc.) by enabling the customer to check the specifications at any early stage using a functional sample.

We therefore recommend that projects are implemented in the following way:

- <u>Summary of requirements</u>
- Structuring of screen pages
- Definition of screen page layout
- Creating images
- Implementation with Excel
- Documentation
- Connection to the PLC

5.1 Summary of requirements

The requirements for a graphical user interface should be documented in specifications. The computer skills of the end user, dialog languages etc. should be taken into account.

5.2 Structuring of screen pages

This refers to the arrangement of the different inputs/outputs on the different screen pages. At this stage, it is advisable to take into account the different user profiles required, such as operator profiles for production and setup parameters, or the service profile for setting and machine parameters etc.

The optimum user-friendliness is achieved if the functions required are initiated with the least number of inputs on the operator interface.

5.3 Definition of screen page layout

This stage provides the basis for creating the images, texts, and fonts if required. Experience has shown that a considerable amount of time is taken up with the creation of images for a visualization project, and modifications to the screen page layout often also require considerable modifications to the images created. It is therefore useful to work only with texts at this initial stage and test the design directly. Visual improvements with icons and images can then always be made at a later stage.

5.4 Creating images

Images are a major part of the project. Meaningful Symbols don't have to be translated. Ideally, a designer has designed the user interface and thus created the necessary image files. Alternatively one can find image libraries in the internet, available for fee and for free:

Open Icon Library

Images and graphics can be created with any <u>standard graphics tool</u> that supports one of the EPAM4 image formats.

The path to the graphics editor used in the EPAM4 IDE can be set at <u>Project - Tools</u>. In order to edit an image file in the project, this is selected and image editing is started with the "Graphics editor" icon. (calling the graphics tool with the selected image file) Alternatively the graphics editor can also be started via the <u>context menu</u>.
See also

IDE Tools

The following image formats are supported:

Forma t	Extens ion	Comment
PCX	PCX ICO	PCX is the standard image format of EPAM3. The image format is used in EPAM4 for backwards compatibility with existing EPAM3 projects and therefore to simplify the migration of existing projects. Image files with <image/> .ICO in EPAM3 are also PCX images, which however are specially processed. (centered output). Image files named <image/> .ICO in PCX format can also be used in EPAM4. The positioning in EPAM4 is independent of the format used. See also <u>#Button</u> for example 8, 16, 24 and 32-bit color depths are supported
Graphi cs Interch ange Format	GIF	Compressed Bitmap format • Transparent • 8-bit color depth • Animation not supported
BMP	BMP	The BMP image format is the standard Windows bitmap format
Portabl e Networ k Graphi cs	PNG	Compressed bitmap format: <u>http://www.libpng.org/pub/png/</u> • Up to 24-bit color depth • Alpha channel • High compression
Scalabl e Vector Graphi cs	SVG	 Vector graphic <u>http://www.w3.org/TR/SVGMobile12/</u> Supported version <u>Format SVG 1.2 Tiny</u> Images are automatically scaled to the size of the object. The <u>SVG Converter 0.9.5</u> enables SVG files to be converted to the Tiny format.
JPEG	JPG JPEG	Particularly suitable for displaying photos

5.5 Implementation with Excel

You can then enter the implementation and define and link your screen pages in Excel.

See also

Project design with Excel

5.6 Documentation

The transparency of the ASCII data format means that project documentation is created virtually automatically at the same time as the project. Additional comments can be added via the Insert - Comment function in Excel. These comments can be added in any line apart from those with the object prefix '#'. They are only shown in the Excel file and therefore have no effect on the execution speed or memory on the target system.

Ideally, the project should be completed at this stage and the operator interface should be ready to run on the target system. In practice, however, the process described will have to be run through

several times, since requirements are modified or extended during project implementation as new information about the project is obtained. With EPAM, however, this does not present any problems since modifications and additions can be carried out simply and quickly thanks to the use of Excel.

5.7 Connection to the PLC

The connection to the PLC is implemented by defining the symbolic variable names, such as in the *VarValue*, *VarState*, *Limit1* and *Limit2 columns*. The variable names can be transferred from the PLC programming environment by importing the symbol file. (this function depends on the respective communication driver)

Refer also to Communication and variables for detailed information on communication

5.8 Tips for touch screen applications

Use light background colors if possible. This reduces the visibility of fingerprints and improves legibility in a light environment.

9

If possible keep to the basic colors red, green, blue, yellow, magenta, cyan, black and white. On flat-screen displays, only these colors ensure the optimum reading angle.

9

Define your touch-activated zones as "finger-friendly" as possible (a finger is not a mouse pointer!).

0

Use the options for showing and hiding objects, and, if possible, only provide the operator with those action fields that are required at that moment. This will ensure a more intuitive application and make it easier to use. This approach will also ensure optimum use of the benefits of touch screen technology.

9

Use the Beep function as an acoustic feedback signal.

0

Take measures to prevent operating errors such as using the <u>#Screensaver</u>, additional confirmation prompts for critical actions etc.

Input and display fields should be clearly distinguishable visually, so that the user will intuitively recognize screen areas with touch activated input fields.



6 Communication and variables

The communication between EPAM and one or several process controllers (*PLCs* or other data sources) is implemented by means of read/write operations for individual variables. Variables are associated with the <u>EPAM objects</u> so that their values can be visualized or controlled. In other words, the communication driver requests actual values from the PLC by means of variables. Any modified setpoints are sent immediately to the PLC by means of individual variables, and then read back. A setpoint value can therefore be reset by the PLC, which will then be displayed immediately in the visualization system.

Variables are interrogated cyclically and only the modified values are refreshed on screen. Only those variables that are required at the time are interrogated, i.e. the variables of all the screen pages (windows) that are opened at the same time.

Variable read and write operations are executed immediately. When the values are written or read in the PLC (cyclically or not) depends on the relevant communication driver.

- Variable names are symbolic
- A variable name is always unique and defines a distinct data item
- Variable names are structured according to a specific schema
- Variables in EPAM4 have a specific data type

See also

Variable name Dynamic variable names Data types Table UserVar Variable-import

6.1 Communication driver

As most PLCs and data sources use proprietary communication protocols, these protocols are implemented in a so-called communication driver.

- The communication driver has an ID consisting of a few characters.
- A connection to a data source or PLC is designated as a communication channel.
- Connections to several and different data sources can be defined at the same time.
- The communication channels are defined in the Hosts tables.

ID	Designation	PLC	Host table
<u>PLCH</u>	Codesys Plc Handler	Codesys V2.x (Arti)Codesys V3.x (Gateway3)	<u>PlcHosts</u>
<u>RS7</u>		 AT-S7 Soft-PLC S7 controllers with Ethernet CP module (e.g. CP-343) or S7-1200 	<u>Rs7Hosts</u>
<u>ADS</u>		 Beckoff Twincat (currently only symbolic, i.e. no BK bus coupler) 	<u>AdsHosts</u>
MIIE		 Siemens SIMOTION via <u>TP_OAMIIF</u> 	<u>MiifHosts</u>

The following drivers are currently available:

See also:

- Parameter setting of the communication channels: Communication settings
- DrvParam worksheet

6.2 Variable names

Variable names must comply with the following schema, and are only detected with this format and processed accordingly.

/<DRV>/<HOST>/<Name>

DRV	ld of the communication driver
HOST	Name of a host (PLC)
Name	Name of variable

Variable names do not distinguish between upper and lower case.

Example

/PLCH/PLC/HMIVar1Variable HMIVar1 from PLC with communication driver PLCH

6.3 Dynamic variable names

The <u>*RTS*</u> is able to generate variable names dynamically. In other words, the name is generated during the runtime from the values of one or several variables. These variables are called index variables.

These *index variables* must be placed between two percentage characters.

Example

/Plch/Plc1/VarArr1[%/Plch/Plc1/Idx1%]

Possible result: /Plch/Plc1/VarArr1[3]

Difference to EPAM3

- PLC variables can be used as well as system variables.
- Index variables can be of any **Basic type**.
- If one of the index variables used changes, the variable is regenerated again, and so a page change is not necessary.

6.4 System variables

System variables are internal variables. They are used to display and control states inside EPAM. The structure of the names is the same as the generally valid schema.

/<DRV>/<HOST>/<NAME>

DRV	Id of the communication driver is S for all system variables
HOST	The following predefined hosts can be created by the system. APP SYS IMP USR Any number of additional hosts can be defined
Name	Name of variable

6.4.1 APP

The following variables are created by the *RTS*. They are used to display or control application settings. These variables are retentive. They are saved in the file APP.INI in the <u>INI directory</u> as follows:

- When EPAM is closed
- When the language is changed
- On actuation of button action *varpool:sysvarsave*

Name	Data type	R/W	Description
Alarm:Type	WSTRIN G	RW	Selects <u>#Alarm</u> when using several alarm objects
AlarmList:Type	WSTRIN G	RW	Selects <u>#AlarmList</u> when using several alarm list objects.
Backlight	WORD	RW	Currently set backlight in percent (0 - 100%). Changing this variable directly changes the display backlight.
Back lightDim	WORD	RW	Backlight dimming by the <u>Screensaver</u> in percent. If the variable isn't set to a value > 0 the backlight will be dimmed to 50%.
Language	WSTRIN G	RW	Specifies the language, empty string corresponds to the default language.
NoBeep	WORD	RW	Affects the TouchBeep during the runtime as follows: = 0 -> <i>NOBEEP</i> from <i>EPAM.INI</i> is considered. = 1 -> No TouchBeep triggered. > 1 -> TouchBeep triggered. >
Password_ <level></level>	WSTRIN G	RW	Password per level, for which <level> 1 - 32767</level>
Recipe[<type>].file</type>	WSTRIN G	RW	File name of the last recipe loaded or saved or to be saved of type <type>.</type>
Recipe[<type>]. name</type>	WSTRIN G	RW	Name of the last recipe loaded or saved or to be saved of type <type>.</type>
Recipe:Path	WSTRIN G	RW	Path to load or save recipes. If empty the <u>default path</u> is used.
Recipe:Type	WSTRIN G	RW	Selects <u>#Recipe</u> when using several recipe objects.
RecipeList:FileFilter	WSTRIN G	RW	Only the recipes matching the filter expression in the variable are displayed. The filter is applied to <i>file</i> column. The filter expression supports wildcards.
RecipeList: NameFilter	WSTRIN G	RW	Only the recipes matching the filter expression in the variable are displayed. The filter is applied to <i>name</i> column. The filter expression supports wildcards. The filter is case insensitive.
Tm_UseAmPm	BOOL	RW	Defines the current time system.
			Affects: <u>/S/SYS/tm_Hour</u> and <u>/S/SYS/tm_lsPm</u> 0 => <u>/S/SYS/tm_Hour</u> = 0-23 , <u>/S/SYS/tm_lsPm</u> =0 1 => <u>/S/SYS/tm_Hour</u> = 1-12 , <u>/S/SYS/tm_lsPm</u> =0/1
			See also: <u>AM/PM time system</u>
User_ <level></level>	WSTRIN	RW	User_ <level> contains the user name for the corresponding</level>

Name	Data type	R/W	Description
	G		<level>. If the <level> changes, the value of the variable User_<level> corresponding to <level> is copied to <i>User</i>.</level></level></level></level>
UnitIdx	WORD	RW	Current unit systems

6.4.2 SYS

The following variables are created by the *RTS*. They are used to display and control internal states and are not retentive.

Name	Data type	R/W	Description
Drv[<driver>][<host>]. state</host></driver>	WORD	R	Displays the state of a PLC 0 = Undefined 1 = Run 2 = Stop 3 = Fault
Drv[<driver>][<host>]. LastError</host></driver>	DINT	R	This variable is <> 0 if the connection ist disturbed
Alarm-specific system variables			
<u>Alarm</u> [<name>].Active</name>	BOOL	R	TRUE if an alarm is active. FALSE if no alarm is active.
<u>Alarm</u> [<name>]. ActiveCount</name>	WORD	R	Number of active alarms.
<u>AlarmList</u> [<name>].Nr</name>	DWORD	R	AlarmNo of the selected alarm
<u>AlarmList</u> [<name>].Info</name>	WSTRING	R	Action1 of the selected alarm
<u>AlarmList</u> [<name>].Text</name>	WSTRING	R	AlarmText of the last selected alarm.
<u>AlarmList</u> [<name>].Tin_Dt</name>	DT	R	Time stamp AlarmOn of the selected alarm
<u>AlarmList</u> [<name>].Tin</name>	WSTRING	R	Time stamp <i>AlarmOn</i> of the selected alarm Format: As <i>AlarmOn column</i>
<u>AlarmList</u> [<name>]. Tout_Dt</name>	DT	R	Time stamp <i>AlarmOff</i> of the selected alarm
<u>AlarmList</u> [<name>].Tout</name>	WSTRING	R	Time stamp <i>AlarmOff</i> of the selected alarm Format: As <i>AlarmOn column</i>
<u>AlarmList[</u> <name>]. Tquit_Dt</name>	DT	R	Time stamp <i>AlarmQuit</i> of the selected alarm
<u>AlarmList</u> [<name>].Tquit</name>	WSTRING	R	Time stamp <i>AlarmQuit</i> of the selected alarm Format: as column <i>AlarmQuit</i>
<u>AlarmList</u> [<name>].TxtInfo</name>	WSTRING	R	<u>Helptext</u> of the last selected alarm. (can for example be the name of a text file when used with <u>#Textlist</u> .
<u>Authent</u> :User	WSTRING	RW	Login name
<u>Authent</u> :Pwd	WSTRING	W	Password for logging in (login) or changing the password (changePwd)
<u>Authent</u> :CurrentUser	WSTRING	R	Contains the user ID of the logged in user
Authent:CurrentRoleName	WSTRING	R	Contains the role name of the logged in user
<u>Authent</u> :LastError	INT	R/W	If errors occur during the Authent actions, an appropriate <u>error number</u> is contained in this variable. The <u>#Message</u> object enables the error text to be displayed.

Name	Data type	R/W	Description
DateTime	DT	R	System time
Edit_val	WSTRING	R	Value of <u>#Variable</u> before editing (input focus).
Ethernet[0].MacAdr	STRING	R	Mac address of the Ethernet adapter 0
Ethernet[0].1pAdr	STRING	RW	IP address (V4) of Ethernet adapter 0
Ethernet[0].GatewaylpAdr	STRING	RW	IP address (V4) of gateway for Ethernet adapter 0
Ethernet[0].SubnetMask	STRING	RW	Subnet mask (V4) of the Ethernet adapter 0
Ethernet[0].Dns1lpAdr	STRING	RW	IP address (V4) of DNS1 for Ethernet adapter 0
Ethernet[0].Dns2lpAdr	STRING	RW	IP address (V4) of DNS2 for Ethernet adapter 0
Ethernet[0].DhcpMode	INT	RW	DHCP mode of Ethernet adapter 0 0 = DHCP disabled, static address 1 = DHCP enabled
Ethernet[1].MacAdr	STRING	RW	Mac address of the Ethernet adapter 1
Ethernet[1].IpAdr	STRING	RW	IP address (V4) of Ethernet adapter 1
Ethernet[1].GatewaylpAdr	STRING	RW	IP address (V4) of gateway for Ethernet adapter 1
Ethernet[1].SubnetMask	STRING	RW	Subnet mask (V4) of the Ethernet adapter 1
Ethernet[1].Dns1lpAdr	STRING	RW	IP address (V4) of DNS1 for Ethernet adapter 1
Ethernet[1].Dns2lpAdr	STRING	RW	IP address (V4) of DNS2 for Ethernet adapter 0
Ethernet[1].DhcpMode	INT	RW	DHCP mode of Ethernet adapter 1 0 = DHCP disabled, static address 1 = DHCP enabled
HelpText	WORD	R	Contains the value of the <i>HelpText</i> = <n> of the <u>#Variable</u> object that contains the input focus.</n>
IrTouch	WORD	R	0 = No IR touch device present 1 = IR touch present
Limit1	WSTRING	R	Lower limit of <u>#Variable</u> with the input focus
Limit2	WSTRING	R	Upper limit of <u>#Variable</u> with the input focus
NewPage	WSTRING	W	Setting the variable to " <u>#page=<name></name></u> " causes the relevant page to be opened or the highest page to be closed via "close". This enables page changes to be triggered in the PLC with <u>#Sys2PLC</u> .
PageName	WSTRING	R	Name of the highest page (page stack).
Pageld	WORD	R	Index (Page option <i>Id</i> =< <i>index</i> >) of the highest page (page stack). 0, if the option <i>Id</i> =< <i>idx</i> >is not set.
PageldLast	WORD	R	Index (Page option <i>Id</i> =< <i>index</i> >) of the highest page (page stack). Index stays unchanged even if the option is not set.
ProjectName	WSTRING	R	Name of the project, is transferred in <u>EPAM.INI</u> with the project.
ProjectProgrammer	WSTRING	R	Name of the programmer, is transferred in <u>EPAM.INI</u> with the project.
ProjectTarget	WSTRING	R	Target of the project, is transferred in <u>EPAM.INI</u> with the project.
ProjectVersion	WSTRING	R	Version of the project, is transferred in <u>EPAM.INI</u> with the project.
PW	WORD	RW	Current password level. Setting this variable causes the internal password level to be controlled. This enables the password level to be controlled directly from the PLC in conjunction with <u>#Sys2Plc</u> .

Name	Data type	R/W	Description
PwlRequired	WORD	R	If an attempt is made to operate an object (touch/ mouse) although this is blocked by the current password level and the <i>PWL</i> = option, is written to the variable.
RC_Password	WSTRING	RW	Input of the password for <u>#Remotecontrol</u>
RCInput_enabled	WORD	R	Shows the current status: 1=Input enabled 0=Input disabled
RecipeList:SelectedFile	WSTRING	R	Filename of the recipe selected in #RecipeList
RecipeList:SelectedName	WSTRING	R	Recipename of the recipe selected in #RecipeList
RemoteClient.connected	INT	R	0 = No <u>RemoteControl</u> client connected. 1 = A RemoteControl client is connected. If a RemoteControl client connects to the target, the <u>screen saver</u> is closed.
RtsVersion	STRING	R	Version# of the runtime system. Eg: '1.1.0.9437'
<i>Trend</i> [<name>].t</name>	DT	R	Time stamp of the latest value in the trend <name>, or at the cursor position.</name>
<i>Trend</i> [<name>].c [<index>]</index></name>	as per DataLog	R	Latest value of curve <index> (1), or at the cursor position.</index>
<i>Trend</i> [<name>].c [<index>].s</index></name>	WSTRING	R	Latest value of curve <index> (1), or at the cursor position, as WString (default format)</index>
Tm_Day	WORD	RW	Day of the month 1 - 31
Tm_wDay	WORD	R	Weekday 0-6 (0 = Sunday)
Tm_yDay	WORD	R	Day of the year 0 - 365
Tm_Mon	WORD	RW	Month 1 - 12
Tm_Year	WORD	RW	Year (including thousand unit, e.g. 2011)
Tm_Hour	WORD	RW	Hour 0 -23
Tm_Min	WORD	RW	Minute 0 - 59
Tm_Sec	WORD	R	Second 0 - 59
Tm_nSec	WORD	RW	Nominal second 0- 59, for input
Tm_HourMax	WORD	R	Set according to /S/APP/Tm_UseAmPm 0->23¦1- >12. Use as Limit2 for entering the time via /S/SYS/ Tm_hour. See also: <u>AM/PM time system</u>
Tm_IsPM	BOOL	RW	Determines whether the hours time is AM or PM. See also: <u>AM/PM time system</u>
TouchError	WORD	R	0 = Touch is OK 1 = Error detected on touch.
User	WSTRING	R	Current user. See also <u>User_<level></level></u>
VariableVerify	WORD	R	Indicates with the value 1 that the 2nd Verify entry is active. This variable is used in conjunction with <u>#Variable</u> and the option Verify. The meaning of the values: 0 = 1st Value entry 1 = 2nd Repeat value entry 2 = 2nd Value input was incorrect, repeat.

6.4.3 TMP

The RTS assigns variables that are not assigned to a host to this /S/TMP.

Example

var -> /S/TMP/var

6.4.4 USR

The following system variables can be created for USR. The <u>S worksheet</u> can be used to specify whether these variables are to be stored as persistent data and other user-specific areas can be defined.



7 Development environment (IDE)

The development environment is embedded in Excel as a COM Add-In.

- Operating principle
- Worksheets in EXCEL
- EPAM4 toolbar

7.1 Toolbar

The EPAM4 tab contains the functions of the EPAM4 development environment (IDE).

After opening Excel with an empty spreadsheet, the following icons are visible:



The following toolbar is displayed after a new project is created or an existing one is opened:

💽 🖌 🖓 - (Ÿ - 🕞) =			Project	L.xls - Microsoft	Excel					×
Start Einfügen Se	itenlayout Form	neln Daten Überprüfe	n Ansicht	Entwicklerto	ols Add-Ir	IS EPAM4				🙆 – 📼 🗙
New Settings Communication Sc	cale Convert	PLC Simulation Build Downl	oad Page Designer	Objects Warnings/8 Project Expl	errors lorer as Text	User Lange Colors	Jages Build	Edit s Text Font	Text Graphics Editor Editor	Manual About
Project	-	Start	J	Views			Extra		10015	нер
A6 🗸 🕑	Ĵ.x			1					_	*
Project Explorer 🔹 🗙	A	ВС	D	E	F	G	Н		Objects	▼ ×
Clear 💥	1								Globals	* ^
Project 1	2								Containers	* ≡
	3 Object	Text/File Font	X [Pixel]	Y [Pixel]	DX [Pixel]	DY [Pixel]	Color	BackColor	Container Defi	initions ¥
Worksheets Pages	5 #Page=start	start Arial12.FNT	(0	320	240	black	white	Controls	*
Project worksheet	6								A #Alarmist	
	7								And melac	
	8								#Dar	
	A Proje	ect1 Text FontMap I	JserColor / Us	erVar / DRVP	arari 4			▶ 1	ab #Button	-
Warnings and Errors	Warnings and Errors									
-										
Bereit 🔛									<u> </u>	—V——(+) .::

The toolbar is separated into following groups:

- Project
- <u>Start</u>
- <u>Views</u>
- Extra
- Tools
- Help

7.1.1 Project



7.1.1.1 New

Project New creates a new EPAM4 project. The following dialog appears after Project New is called:

Create project					×					
<u>N</u> ame:	Project 1									
<u>S</u> tartpage:	start	start								
Programmer:	Hans Muster	Hans Muster								
Pat <u>h</u> :	D:\EPAM4\Proj	ekte\Project1								
Version:	0	1	0	0	Auto increment					
<u>T</u> arget device:	EP-37x-05			•						
					<u>D</u> k <u>X</u> ancel					

Project	Project name or name of the Excel file. EPAM4 creates an XLS file in the "Excel 97-2003 Workbook" format. The <u>Project worksheet</u> is assigned this name.
Startpage	Name of the start page
Programmer	Name of the developer.
Path	Project path
Version	Project version as 0.1.0.0. The Auto increment option causes the last version position to be incremented with each build or with each modification (see also <u>Project Settings</u>). The current project version can be displayed using the <u>Project versionsystem variable</u> .
Target device	Selecting the target

These settings can be changed in **Project Settings**.

7.1.1.2 Settings

The following project specific settings can be displayed and changed in the Project Settings tab:

Project settings
Simulation settings
Target system settings
Settings for text and graphics editor tools used
User specific settings
Page Designer specific settings

Ρ	roj	е	ct

Project:	Project1		Application QSS File	
Programmer:	G1345			
Version:	0	1 0 0		
	Version auto ir	icrement On build		
Project File:	Project1.txt			
Project Size:	0	Bytes		
Datalog Size:	0	Bytes		
RAM-Drive Size:	16'384	KBytes Used: 0.00 %		
Total Pages:	2	Total Variables: 81		
Total Objects:	2			

Contains the project settings such as project name, programmer, version, target system, IP address, screen resolution, as well as project information such as size, number of pages, number of variables etc.

The Application QSS File field enables a <u>Qt Style Sheet</u> file to be specified. This file enables default settings of Qt objects, such as scroll bars to be changed globally for the entire project.

See also System variables

/S/SYS/ProjectName /S/SYS/ProjectProgrammer /S/SYS/ProjectTarget /S/SYS/ProjectVersion

Simulation

Contains the path to the EPAM4 runtime (winepam.exe) as well as the Parameter command line for the simulation.

Settings		8 X
Project Simulation	Target Tools User Page Designer	
	_	
Runtime:	D:\svn\49659_EPAM4\ts\trunk\runtime\workspace\VC8\debug\winepam.exe	<u></u>
Parameter:	-communication off -resolution 640x480 -g	
	Communication on Test variables	
	Delete INI-files Save languages	
		✓ OK X Cancel

Runtime	Path to the EPAM4 Runtime (winepam.exe)		
Parameter	Startparameters for the simulation (read only)		
Communication on	Communication on for simulation		
Test variables	Read all variables on simulation start. For testing purpose. A message box notifies about read errors. With this option, on the startup may take very long. Depending on variable count and read errors.		
Save Languages	Saves also language-dependent files for Simulation and Download		
Simulation	Start the simulation		

Target

52

rget:	EP-37x-10		-	IP-Address:		
creen				Paths		
vidth:	640	Height: 480	Portrait	Ram:	\EPAM4	
thers				Backup:	\StorageCard\EPAM4\BACKUP	
nit Picture	e:			Log:	\EPAM4\Log	
nput Devi	ce: TOUCH		•	Project:	\StorageCard\EPAM4\PROJECT	
Commu	inication on	Read all variables on sta	art up	Font:	\StorageCard\EPAM4\FNT	
Extract	project to ram	Don't allow to exit the R Support gestures	rs	Library:	\StorageCard\EPAM4\LIBS	
C Touch t	beep on or:			Data:	\StorageCard\EPAM4\DATA	
Tap radius	5. 5.			Recipe:	\StorageCard\EPAM4\REC	
TapAndHo	ld timeout [ms]:	*		INI:	\StorageCard\EPAM4\INI	

Target	Target device for the project
IP-Address	IP-Addresse of the target device Used for download and communication
Screen	Display resolution of the target device
• Width	With in pixel
 Height 	Height in pixel
Portrait	Portrait, swaps width and height
Paths	Target specific directories, normally not to be changed
• Ram	Directory in the ram filesystem
• Backup	Directory for backup files
• Log	Directory for log files, eg. Datalog
Project	Directory for extracted project. Not relevant if "Extract project to ran" is set.
• Font	Font files are copied to this directory, therefore they have to be downloaded only once.
• Library	Directory for EPAM4 libraries
• Data	Directory to exported files into. E.g. Datalog, Alarm
Recipe	Directory to store recipe files
• INI	Directory to store remanent date. like systemvariables and alarmbuffer,
Init Picture	Optional path and name of an <u>image file</u> that is displayed centered on the screen when the RTS started. E.g.: \storageCard\logo.bmp
Input Device	 Mouse: Show the mouse cursor Touch: Hide the mouse cursor

53

Communication on	Enable the communication to the PLC		
Extract project to ram	Extract the project into the RAM Directory. This accelerates the project file access and leads therefore to a faster screen page loading.		
Touch beep on	Activate the "Touch Beep" used as feedback for the operator.		
Read all variables on start up	Read all variables on RTS startup. Use for testing purpose only! The startup may take very long, depending on variable count and read errors. A message box notifies about read errors.		
Don't allow to exit	Prevent toe exit the RTS, for example with the ESC-Key.		
Support gestures	Switch the RTS into the Gesture-Mode		
Busy Cursor		The busy cursor is visible while loading a new page	
	Off	No cursor is visible while loading a new page	
	Enhanced	The busy cursor is visible if loading the new page exceeds 120	
Tap Radius	Relevant only Specifies the If empty, the	y with Gesture-Mode on. c circle in which an Tap-Gesture may be detected. default is 25 pixel.	
TapAndHold timeout [ms]	Duration a B 0 is equivale	utton has to be pressed until a TapAndHold gesture is fired. nt to the default value of 700 ms	

The Target settings are saved in the EPAM.INI file and are copied to the target system in the EPAM project directory.

Tools

The path to the text and graphics editor used can be defined here. (Default: Paint and Notepad)

User

Settings				S X
Project Simul	ation (Target (Tools User F	Page Designer		
Default Font	Arial		Save project automatically after	er build
Font Size	9	🗼 Font Setup	Hide system tables	
Styles	Office2007VistaGlass	•	Check formula errors	
			Log only errors	
				V OK X Cancel
ofault E	ont	Defines the font used in th	he project worksheet wh	an new objects are
	JIIL	inserted.		on new objects are
ave proj fter buile	ect automaticall d	ySave the XLS file after a b	build	

after build	
Hide system tables	Hides the system tables in the project
Check formula errors	While text files are generated, excel formulas are checked for errors.
	Errors are displayed in the "Warning/Error" view.
Log only errors	Only errors are logged into
	C:\Users\ <username>\AppData\Roaming\Grossenbacher\Epam4</username>
	\IDE\EpamLog.txt
	else debug information as well.

Page Designer

55

Settings		? ×
Project Simulation Target	Tools User Page Designer	
Image Output Directory:	C:\Users\g1345\Documents\Project1\GeneratedImages\	
Image Format:	W3C Portable Network Graphics (*.PNG)	
Workboard	Grid	
Backcolor:	Beige Show grid Size: 5	
Off screen color:	ControlDark 💽 Align objects to grid 🗹 Hide off screen	
	✓ ОК	💥 Cancel

Image Output Directory	Default directory for "save active container as image"
Image Format	Imageformat for "save active container as image"
Workboard	
 Backcolor 	Backcolor of the workboard
 Off screen color 	Color to cover the off screenn area
Grid	Snap grid
Show Grid	Show snap grid
 Size 	Width
 Aligne objects to grid 	Snap objects to grid
 Hide off screen 	Cover the off screen area

7.1.1.3 Communication settings

The *Communication Settings* dialog can be used to activate the required communication drivers. The communication channels can be defined and edited for each driver via [Edit]. A symbol file with the variables of a PLC can be imported for each communication channel.

Commun	ication Sett	ings	? ×
Drivers:			
PLCH	<mark>∠2</mark> Edit	•	The Import Symbolfile
RS7	🛃 Edit	•	K Import Symbolfile
ADS	🗾 🛃 Edit	•	K Import Symbolfile
MIIF	📝 Edit	Sim1 🔹	TS Import Symbolfile
			<u> </u>

Parameter setting of the communication channels:

- <u>PLCH</u>
- <u>RS7</u>
- <u>ADS</u>
- <u>MIIF</u>

See also:

<u>Communication driver</u>

7.1.1.3.1 PlcH

The communication channels to *Codesys* PLCs can be defined here. A communication channel is referenced by its name. (normally the name of the relevant PLC) The name of the communication channel is relevant for the <u>variable names</u>.

Communic	ations Settings for PLCH					? — @ X
Driver Settin Type: Host File:	gs PLCH PLCHosts.txt	Time Nice:	out: 60			✓ 0 <u>k</u>
PLC1	 ♣ Add ■ Bemove Rename 	PLCH Host Name: IP Address: Interface Type: Codesys-Address: Port: Application Praefix: Symbol File:	PLC1 127.0.0.1 Gateway3 ▼ CE-0090FB2DBCEF I DemoEpam4.	Delay: Delay On Error: Log Level: Retry: Timeout: HW-Type	200 10 0 6 0	

See also:

- Driver settings: DrvParam worksheet
- Host parameters: <u>PIcHosts worksheet</u>
- Variable names

7.1.1.3.2 Rs7

The communication channels to *S7* or *AtS7* PLCs can be defined here. A communication channel is referenced by its name. (normally the name of the relevant PLC) The name of the communication channel is relevant for the <u>variable names</u>.

vne:	BS7			Timeout [e]	60			V 0
ype.	1.57			rineout [a]				🛛 🔀 Can
lost File:	RS7Hosts.	bt		Nice:	0			
osts								
h1		bbA 🚽	RS7					
		Remove	Host Name:	Ch1		Delay [ms]:	200	
		Pename	IP Address:	EPA	M4-PLCHOST	Delay On Error [s]:	3	
		Nename	Optimize:	No	•	Log Level:	0	
			Chanel:	16		Retry:	3	
			Rack:	0		VarName:	DB_Number	•
			Slot:	3		PDU-MaxSize:		
			Symbol File:					

See also:

- Driver settings: DrvParam worksheet
- Host parameters: <u>Rs7Hosts worksheet</u>
- Variable names

Variable addressing

As EPAM always works with symbolic variables, the addresses of the symbols must be entered in the <u>UserVar worksheet</u> in the *Address* column.

Supported address notation

Data block		
Data type	Abbreviated form	S7 notation
BYTE	DB <x>.<y></y></x>	DB <x>.DBB<y></y></x>
WORD		DB <x>.DBW<y></y></x>
DWORD		DB <x>.DBD<y></y></x>
BOOL		DB <x>.DBX<y>.<z></z></y></x>

Markers

Data type	Abbreviated form	S7 notation
BYTE		MB <x></x>
WORD		MW <x></x>
DWORD		MD <x></x>
BOOL		M <x>.<y></y></x>

Restrictions and special features

Byte order problem

S7-compatible PLCs use the Big-Endian format, whilst EPAM (x86) on the other hand uses the Little-Endian format.

The communication driver makes the necessary conversion according to the following schema.

Conversion to EPAM type

If a variable consists of a byte address, the VarType is used for the conversion.

Example.

Address	VarType	Conversion
DB10.DBB8	WORD	Read 2 bytes, swap bytes

Conversion according to address type

If a variable does not consist of a byte address, but of a WORD address, for example, the type of the

address is used for the conversion.

Example.

Address	VarType	Conversion
DB10. DBW8	WORD	Read 2 bytes, swap bytes

STRING

In the S7, the first two bytes of a string variable contain the maximum and effective length of the string. The maximum length must match the data type. The default length for STRING is 80.

Data types

The following data types correspond:

EPAM	S7	Comment
BOOL	BOOL (Bit) / BYTE	An EPAM BOOL can be defined in the PLC as BOOL as well as BYTE.
BYTE/ USINT	BYTE	
SINT	BYTE	
WORD/ UINT	WORD	
INT	INT	
DINT	DWORD	
DWORD	DWORD	
REAL	REAL	
STRING	STRING	
DT	DT	The DT type of EPAM does not recognize [ms] so that the conversion loses accuracy
TIME	TIME	

7.1.1.3.3 ADS

The communication channels to *TwinCat* PLCs can be defined here. A communication channel is referenced by its name. (normally the name of the relevant PLC) The name of the communication channel is relevant for the <u>variable names</u>.

Communicat	tions Settings for ADS				X
Driver Setting Type: Host File:	s ADS ADSHosts.txt	Time of Nice:	out: 0		✓ 0 <u>k</u> X <u>C</u> ancel
ADS1	<u> </u>	ADS Host Name: AdsServer-IP: Ads server port: Ams NetID:: Ams port: Symbol File	ADS1 192.168.18.169 	Delay: Delay On Error: Timeout: Retry: Entwicklung\Opric\vonNik\Mas	chine.SY

See also:

- Driver settings: DrvParam worksheet
- Host parameters: AdsHosts worksheet
- Variable names

7.1.1.3.4 MIF

The communication channels to SIMOTION devices can be defined here.

On the SIMOTION device the <u>TP OAMIIF</u> must be installed!

A communication channel is referenced by its name. (normally the name of the relevant PLC) The name of the communication channel is relevant for the <u>variable names</u>.

Driver Setting Type:	gs MIIF			Timeout [s	s]: 60		✓ 0 <u>k</u>
Host File:	Miif Hosts.t	bxt		Nice:	0		X Cancel
Sim 1		Add <u>Remove</u> Rename	MIIF Host Name: IP-Address Timeout [s]: Retry: Symbol File:	Sin 16: 3	9.254.11.22	Delay [ms]: Delay On Error [s]: Log Level:	200

See also:

- Driver settings: DrvParam worksheet
- Host parameters: MiifHosts worksheet
- Variable names

Variable Import

Variables may be imported from ST-file.

Commun	nication Set	tings	2	x
Drivers:				
PLCH	🗾 Edit	•	Import Symb	oolfile
RS7	📝 Edit	•	Timport Symb	olfile
ADS	🗾 Edit	•	Import Symb	oolfile
MIIF	📝 Edit	Sim1	Import Symb	oolfile
			✓ <u>c</u>	<u>)</u> k

Import Symbolfile

1	Import MIIF Variables
	Symbolfile: S:\DISPLAY\ENTW\SupportFälle\Bugs\1557\Maja\Exportform
	Variable prefix:
	Remove undefined variables
	V Ok K Cancel

The imported variable names are concatenated to a EPAM variable as follows:

/MIIF/<host>/<prefix>/<filename>/<variable>

Beispie:	
host:	siml
Variable prefix:	var
filename:	dGlobal.st
variable:	w1

ergibt: /MIIF/Sim1/var/dGlobal.w1

If the prefix was omitted, the variables are imported without prefix:

result: /MIIF/Sim1/dGlobal.w1

The runtime system inserts the default prefix unit when ever the prefix is missing! result: /MIIF/Sim1/unit/dGlobal.w1

7.1.1.4 Scale

This function scales the project to another device, respectively to another display resolution. It scales all the <u>EPAM-Objects</u> from the project table, also there is an option to scale all Fonts from the table <u>Fontmap</u> and to scale all pictures found in the project path.

Scaling a big project can take several minutes.

Scale	? ×
-Actual Target	Scale to Target
EP-30x-05	EP-37x-12 💌
Screen X: 320	Screen X: 800
Screen Y: 240	Screen Y: 600
-Scale Options	
Scale Fonts	Scale Pictures
Overwrite Formulas	
Save original Project to: (this	one will be overwritten)
C:\Users\g1547.GESYS\Desktop	p
Scale	Cancel

In the area "actual target" you can find your actual target's name and it's display resolution. In "scale to target" you can choose your new target device, which the selected stuff in "scale options" gets

scaled to. For trial projects and prototyping there is the option that you can set the parameters Screen X (screen width in pixels) and Screen Y (screen height in pixels) by yourself.

Option "scale fonts"

By choosing this option, all Font defined in the table Fontmap get scaled to your selected target.

Option "scale pictures"

By choosing this option, all Pictures according with the EPAM image formats, found in the project get scaled to your selected target.

If you scale pictures which provide transparency (*.PNG, *.GIF), the transparency gets lost. To avoid this problem, you can scale those pictures manually using an image editing software like GIMP (www.gimp.org) or Adobe Photoshop (www.adobe.com).

Option "overwrite formulas"

You can choose this option if your project does not contain any formulas. By choosing this options, all existing formulas will get overwritten. The advantage by not taking care of formulas is, that the scaling process is much faster.

Option "save original project to"

To prevent data loss, the project can get saved to a specific path, before it gets scaled. If you choose this option, you can define a path where the data get saved by clicking the button placed left to the textbox which shows you your selected path. The default path is path/myProjectFolder _original.

7.1.1.5 Convert

Converts an existing EPAM3 project to an EPAM4 project. Additional adaptions must then be carried out manually after this step.

See also Migration of EPAM3 projects and New functions in EPAM4

This button is active only in an EPAM3-Project is loaded.



The conversion can't be reverted!

7.1.1.6 Archive

Pack all project relevant files into ZIP-archive.

Archive	8 ×
Include fonts	View password as plain text
Password:	
a Sa	ve Send 🎗 Close

[x] Include fonts Include the font files into the archive

[x] View password as plain text Show the password in plain text.

Password

Enter a password to protect the ZIP-archive.

Save Save the archive to

Send Send the archive by email.

Close

Close this dialog.

7.1.2 Start



The start menu contains the following actions:

- Simulation with PLC option (active = with communication to PLC)
- Build
- Download
- Page Designer

Simulation

Simulation saves modified worksheets automatically and starts WinEPAM. (see also <u>Project</u> <u>Settings - Simulation</u>)

The application can then be tested on the development PC.

If the PLC option is active, communication to the PLC is activated according to the <u>communication</u> <u>settings</u>. (this function depends on the communication driver in use)

Build

Build saves all worksheets, compiles and tests the entire project.

Download

Download saves the modified worksheets automatically and carries out a project download to the target system or a local directory.

FTP

The download to the device is carried out via Ethernet and FTP. For this the device must be connected to the development PC and the FTP server must be configured accordingly (see also WindowsCE device description or system description).

Download		
FTP Local Directory		
Username: Password: IP-Address: Target-Path: \StorageCard\Eff	Download recipe Download project source Download fonts AM4	 Delete datalog Delete recipe Delete INI-files
Build all before download	Download	✓ <u>O</u> k <u>X</u> <u>C</u> ancel

Username	FTP-User
Password	FTP-Password
IP-Address	IP address of the target system
Target-Path	Directory on the target system (depending on the target system selected)
Optionen:	
Download Recipe	The pre-defined recipes are transferred with with the project
Download Project Source	The entire project directory is transferred as a Zip file
❑Download Fonts	All True Type Fonts (*.TTF) used are downloaded (must only be activated if new fonts (*.ttf) are defined)
Delete Datalog	Existing DataLog files on the target system are deleted
Delete Recipe	Existing recipe files on the target system are deleted
Delete INI-Files	Existing INI files (system variables and alarm history) are deleted
Test connection	Carries out a connection test
Build all before Download	A build is executed before the download
Download	Starts the download. All project files required are compressed into the project.prj file and then loaded onto the target system via FTP.
Ok	Saves the settings and closes the dialog without a download
Cancel	Closes the dialog without saving and without a download

Local Directory

Local Directory enables the download to be carried out to a local directory.

BAN Do	vnload	
FTP	ocal Directory	
Path:	C:\Users\g1345\Documents\Project1\Target	
	Create project.prj	
🗆 Bui	Id all before download Solution of the second secon	X Cancel

Path	Target directory
Create project.prj	Generates the compressed file project.prj with all required project files. Otherwise all the files required in the project are copied to the selected directory.

The content of the directory can then be transferred manually to the target system or via a CF card reader to the CF in the EPAM project directory.

Page Designer

Starts the Page Designer with the selected #Page

7.1.3 Views

The following views can be activated in the Views menu:

✓ Objects	Objects	Show/hide the Objects View
Warnings/Errors	Warnings/Errors	Show/hide the Warnings/Error View
Project Explorer	Project Explorer	Show/hide the Project Explorer
Views		

0

Size and position of the views may be adjusted individually.

Objects



The *Objects* View contains all available Objects. The view is structured into <u>Globals</u>, <u>Controls</u>, <u>Containers</u> and <u>Container definitions</u>.

Inserting new objects in the project:

1. Select a line in the project where the new object is to be inserted

2. Insert the new object by double clicking it in the EPAM4 Toolbox

In the Page Designer it's possible place an new object with Drag&Drop.

Project Explorer

roject	Explorer	• ×
	(Clear 💢
Actio	nsDiagSig	•
Wor	ksheets Pages Groups	
Scro	ILists	
	Pages	~
	- ActionsDiagSig	
	Alamdetails	
	Alam Diag Sig	
	Alam Filter	
	Alamhandling	
	- AlamHelp	
	- Alam History	
	- Alamlist Border	
	AlarmSort	-
1	m	•

The *Project Explorer* enables simple navigation within the project. A search filter can help th reduce the number of entries.

Following entities are listed:

- Worksheets
- Pages
- Groups
- ScrollLists

Warnings and Errors

Warn	ings a	and Errors		•	<
	1	[10.05.2013/13:33]:	English\Alarmhandling.txt not saved, English column could not be found	-	
	2	[10.05.2013/13:33]:	English\Alarmhistory.txt not saved, English column could not be found		
	3	[10.05.2013/13:33]:	English\LogView.txt not saved, English column could not be found	=	
	4	[10.05.2013/13:33]:	English\RecipeList1.txt not saved, English column could not be found		
	5	[10.05.2013/13:33]:	Japanese\Alarmhandling.txt not saved, Japanese column could not be found		
	6	[10.05.2013/13:33]:	Japanese\Alarmhistory.txt not saved, Japanese column could not be found	-	,
•			III	P.	

Error and warnings are listed in this view.

7.1.4 Fonts menu



The Fonts menu enables new fonts to be defined (Add) or existing font definitions to be edited (Edit) or deleted (Remove).

ARIAL.FNT ARIAL10.FNT	-
ARIAL10F.FNT	
ARIAL12.FNT	
ARIAL12F.FNT	Ξ
ARIAL 14. FN I	
ARIAL 7 ENT	
ARIAL8.FNT	
ARIAL8F.FNT	
ARIAL9F.FNT	
COURIER.FNT	
CVC0CV11 ENT	
SYS08X16 ENT	-

Font definitions are stored with a name in the <u>Fontmap</u> worksheet and are referenced via this name in the Project worksheet. The <u>Font column</u> enables the defined font definitions to be selected via the <u>context menu</u>.

+ Add Font

Defines a new font with <name>. Font names must be unique. The font properties can then be defined in the Font dialog:

Schriftart:	Schriftschnitt:	_	Schrift	tgrad:	-
Microsoft Sans Serif	Standard		8		ОК
Microsoft Sans Serif Michael Modern No. 20 Monotype Corsiva MS Outlook	Standard Schräg Fett Fett Schräg	*	8 9 10 11 12 14 16	• III •	Abbrechen
	Beispiel AaBbY	yZz			
	Skript:				
	Westlich			-	

7.1.5 Extra

The Extra menu contains the following functions:



- Save AsSaves the current worksheet as a Unicode text file
- Text
- User Colors ... Definition of new and editing of existing color definitions (UserColors)
- Languages ... Definition of new or deletion of existing languages
- Build ...Tool for managing the multilingual texts in the project via the <u>Text</u> worksheet Languages Text

User Colors

The User Colors dialog enables existing <u>color definitions</u> to be changed, deleted or new color names defined with RGB and Alpha channel (transparency). The color definitions are stored in the <u>UserColor</u> worksheet. Color definitions are referenced in the EPAM project via the name of the color. Existing colors can be selected in the Project worksheet via the <u>context menu</u> in the corresponding Color, Backcolor columns.

User colors	? ×
dark green	Edit •
User colors	₽ New
black blue brown cyan dark blue dark cyan dark green dark grey dark magenta dark red green grey magenta red transparent white	<u>D</u> elete <u>U</u> ndo <u>Ok</u> <u>Ok</u> <u>dark green</u> R: <u>O</u> <u>G</u> : <u>128</u> <u>B</u> : <u>O</u> <u>A</u> : <u>Z</u> <u>U</u> <u>FFF008000</u>

Pipette

 \simeq Use the pipette tool to copy the RGB-value from any pixel an the screen.

ARGB

The ARGB Value may be changed in hex and in decimal.

Languages

The Languages dialog enables new languages to be defined or existing languages to be deleted. Languages are referenced via the language name.

Englisch	1	

+Add

Defines a new language <name> in the EPAM application. In all <u>language-dependent worksheets</u> this adds two other language columns for <u>Text/File</u> and <u>Font</u> at the end. A subdirectory is also defined with the language names in the current project directory. All language-dependent files (*.TXT, *.<u>IMG</u>, *.FNT) are stored in the subdirectory for the corresponding language.

Language-dependent texts can be edited centrally in the worksheet <u>Text</u> and managed using <u>Build</u> <u>Languages Text</u>.

Column B and C with Text/File and Font contain the default language.

Build languages text

Automatic "compilation function" for multilingual applications. The language-dependent texts are inserted automatically in all_<u>language-dependent_worksheets</u> in the <u>Text_File_</u>column of the corresponding language according to the text definition in the <u>Text</u> worksheet. (Text worksheet -> Project)



Insert undefined text option

If the Insert undefined text option is activated, undefined texts are inserted from the <u>language-dependent worksheets</u> into the Text worksheet. (Project worksheet -> Text)

- All languages ... also transfers the language-dependent texts from the worksheets into the Text worksheet
- Only default language ... accepts only the texts from the default language into the Text worksheet

Build language text	X
Insert undefined text	
All Languages	
Only default Language	
	V OK X Cancel

Scale Project

This function scales the project to another device, respectively to another display resolution. It scales all the <u>EPAM-Objects</u> from the project table, also there is an option to scale all Fonts from the table <u>Fontmap</u> and to scale all pictures found in the project path.

Scaling a big project can take several minutes.

Scale	? <mark>×</mark>	
Actual Target	Scale to Target	
EP-30x-05	EP-37x-12 💌	
Screen X : 320	Screen X : 800	
Screen Y: 240	Screen Y: 600	
-Scale Options		
Scale Fonts Scale Pictures		
Overwrite Formulas		
Save original Project to: (this one will be overwritten)		
C:\Users\g1547.GESYS\Desktop		
Scale	Cancel	

In the area "actual target" you can find your actual target's name and it's display resolution. In "scale to target" you can choose your new target device, which the selected stuff in "scale options" gets scaled to. For trial projects and prototyping there is the option that you can set the parameters **Screen X** (screen width in pixels) and **Screen Y** (screen height in pixels) by yourself.

Option "scale fonts"

By choosing this option, all Font defined in the table <u>Fontmap</u> get scaled to your selected target.

Option "scale pictures"

By choosing this option, all Pictures according with the <u>EPAM image formats</u>, found in the project get scaled to your selected target.

If you scale pictures which provide transparency (*.PNG, *.GIF), the transparency gets lost. To avoid this problem, you can scale those pictures manually using an image editing software like GIMP (<u>www.gimp.org</u>) or Adobe Photoshop (<u>www.adobe.com</u>).

Option "overwrite formulas"

You can choose this option if your project does not contain any formulas. By choosing this options, all existing formulas will get overwritten. The advantage by not taking care of formulas is, that the scaling process is much faster.

Option "save original project to"

To prevent data loss, the project can get saved to a specific path, before it gets scaled. If you choose this option, you can define a path where the data get saved by clicking the button placed left to the textbox which shows you your selected path. The default path is *path\myProjectFolder_*original.

7.1.6 Tools

A text or graphics editor can be called in the Tools menu. These can also be called in the corresponding column via the <u>context menu</u>. In this case, the text or graphics editor is called with the appropriate file of the selected cell.



The settings for this can be made in the **Project Settings Tools** menus.

Text Editor...Opens the text editor (Default: Notepad)Graphics...Opens the graphics editor (Default: Paint)Editor

7.1.7 Help



Manual: Online Help.

About

About	
	EPAM4IDE EPAM4 1.1.10.1
	IDE 1.1.0.8749
	Copyright © 2013 Grossenbacher Systeme AG
	Trial version, 22 days left.
	Register key of
	<u>displaysystems@gesys.ch</u> +41 71 243 29 74 ✔

Version:

- EPAM4: Version of "SetupEPAM4-IDE"
- IDE : Version of the EPAM4IDE (Excel AddIn)
Licensing:

Without a valid license the IDE is a fully functional trial version for 30 days. After 30 days the project download to a target is no longer possible.

Die IDE ist nach der Installation 30 Tage als "Trial version" voll funktionsfähig. Nach Ablauf der 30 Tage kann kein Download aufs Target kann kein Download mehr ausgeführt werden.

You must purchase a license per workstation. Per license you'll get a license key. Enter the key in the textfield and press "Register key". Use following contact to oder a license:

e following contact to cach a noonoo.

Email: displaysystems@gesys.ch Phone: +41 (0) 71 243 29 74

7.2 Worksheets in EXCEL

The first worksheet contains the definitions of different screen pages, the objects, actions etc. and the associated variables. Other worksheets are provided for additional information, e.g. about objects. These worksheets are automatically created if required.

The following worksheets are provided:

Worksheet type	Description	Number
<u>Project</u>	The <u>Project</u> worksheet is used to define all screen pages and their objects with attributes.	1
Text	The <u>Text</u> worksheet is used for managing multilingual project- specific texts.	1
<u>UserVar</u>	The UserVar worksheet is used for defining all variables.	1
<u>UserColor</u>	The <u>UserColor</u> worksheet contains the color names and color definitions.	1
Setup	The Setup worksheet contains different project settings and should not be changed.	1
<u>DRVParam</u>	The <u>DRVParam</u> worksheet contains the settings for the communication between EPAM and the PLC and should not be changed.	1
<u>Hosts</u>	The <u>Hosts</u> worksheet contains the settings for communication with different Codesys PLCs via Ethernet (TCP/IP).	1
<u>RS7Hosts</u>	The <u>RS7Hosts</u> worksheet contains the settings for communication with S7 PLCs via Ethernet (TCP/IP).	1
<u>S</u>	The <u>S</u> worksheet contains user-specific system variable groups (Hosts).	1
<u>Alarm</u>	The Alarm worksheet contains the alarm definitions of the Alarm object.	1 per alarm object
<u>AlarmList</u>	The AlarmList worksheet contains the definitions of the AlarmList object.	1 per AlarmList object
<u>Datalog</u>	The Datalog worksheet contains the variable definitions for the Datalog object. A Datalog worksheet is created for each Datalog object, and is referenced via the worksheet name.	1 per Datalog object
<u>Message</u>	The Message worksheet contains the definitions of the Message object. A Message worksheet is created for each	1 per message object

	Message object and is referenced via the worksheet name. However, several Message objects can also use the same Message worksheet.	
<u>Recipe</u>	The Recipe worksheet contains the <u>variable definitions</u> for a recipe type. Several different recipe types can be defined in a project (e.g. product and machine parameters). The associated variable definitions are referenced via the worksheet names.	1 per recipe object
<u>Trend</u>	The Trend worksheet contains the definitions for the trend object. A Trend worksheet is created for each Trend object, and is referenced via the worksheet name. Several Trend objects can use the same Trend worksheet.	1 per trend object
<u>Sys2PLC</u>	The Sys2PLC worksheet contains the variable definitions for the Sys2PLC object. A Sys2PLC worksheet is created for each Sys2PLC object and is referenced via the worksheet name.	1 per Sys2PLC object
<u>Fontmap</u>	The Fontmap worksheet contains the font definitions (name, type, style)	1
<u>VBar</u>	The <u>VBar</u> contains the definitions for the display of the VBar object	1 per VBar object
<u>VMeter</u>	The VMeter contains the definitions for the display of the VMeter object	1 per VMeter object

Attention!

The type of a worksheet is stored as a comment in the first cell (A1) and must not be changed or deleted.

7.2.1 **Project worksheet**

Objects are provided for defining the screen pages. An object can be defined for each row in the Excel spreadsheet.

A screen page starts with the object <u>#Page=name</u> and ends with a blank line or with a line that does not start with the object prefix '#'.

The <u>Page object</u> defines the screen page (position and dimension) in which all the objects below are placed. An object starts with the #Object name. All rows that do not have the object prefix in the first column are comment lines.

Each EPAM object always has the following basic properties. Not every object supports all properties. Certain parameters are sometimes interpreted differently. Some properties are Mandatory and must always be specified, whilst others are Optional.

Column	Designation	M/O	Description
А	Object	М	Object name, possibly followed by =
В	<u>Text/File</u>	O/M	Object-dependent text or file.
С	<u>Font</u>	0	Font for text output. The font name refers to the font definition (font, style, size,) in the <i>Fontmap</i> worksheet.
D	<u>X [Pixel]</u>	0	Position of the object in pixels from the left edge of the Container object. e.g. Page • Constant in pixels

Column	Designation	M/O	Description
			Variable of type INT
E	Y [Pixel]	0	Position of the object in pixels from the top edge of the
			Container object. e.g. #Page
			Constant in pixels
			Variable of type INT
F	DX [Pixel]	0	Width of the object in pixels.
			Constant in pixels
			Variable of type INT
G	DY [Pixel]	0	Height of the object in pixels.
			Constant in pixels
			Variable of type INT
Н	<u>Color</u>	0	Foreground and text color.
			Constant (see: <u>Colors</u>)
			Variable of type DWORD
I	Backcolor	0	Background color
			Constant (see: <u>Colors)</u>
			Variable of type DWORD
J	<u>Format</u>		Format definition, e.g. for the border
K	<u>Action</u>	0	Executable action, e.g. on actuation.
L	Limit1	0	Lower limit value as constant or variable.
M	Limit2	0	Upper limit value as constant or variable.
N	ActionLimit1	0	Executable action if VarValue is below Limit1.
0	ActionLimit2	0	Executable action if VarValue is above Limit2.
P	VarValue	0	Variable name
Q	<u>VarType</u>	0	Data type of VarValue, Limit1 and Limit2.
R	VarState	0	Status variable, for controlling the object status. This
			variable must be a numerical data type.
S	Option	0	Additional options that have an effect on the behavior or the
			display of the object.
Т	Function	0	Contains predefined functions for converting variable values,
			e.g. with unit system conversion
U	Init Action	0	Action is executed on Init (initialization) of object.
V	Exit action	0	Action is executed on Exit (closing) of object.
W	Comment	0	Comment
X	Language	0	Language-dependent texts and fonts from column X
	<u>column</u>		

7.2.1.1 Object column

The Object column is used to define EPAM objects. The following objects can be defined:

Object	Meaning	Туре
<u>#Alarm</u>	Alarm monitoring with history (512 alarm messages), time stamps for "Come", "Go" and "Acknowledged" alarms	Global object
#Alarmlist	Output of the alarm events in a list	
#Authent	User management with user and password	Global object
<u>#Bar</u>	Display of a value in a rectangular bar	
<u>#Button</u>	Non-latching, touch activated area	
<u>#DataLog</u>	Logging of PLC data/variables to a DataLog file	Global object
<u>#DiagSig</u>	Diagnose signal, display of flashing points (e.g. machine	

	image) for diagnostic purposes in response to alarms	
<u>#DropDownList</u>	Touch-activated area, selection of one or several options from a list	
<u>\$Group</u>	Definition of a Group object consisting of different EPAM objects	Container definition
<u>#Group</u>	Call of a group object	Container object
#LogView	Diagnostic object for displaying internal EPAM messages	
#Message	Output of messages in the form of text or image information	
<u>#Meter</u>	Display of a value in a semi-circle/circle user-defined segment	
<u>#Page</u>	Dimension of the screen page	Container object
#Password	Password management	Global object
#RadioButton	Touch-activated area, selection of one of several options	
#Recipe	Recipe management	Global object
#RecipeList	Output of the recipe files in a recipe list	
<u>#ScreenSaver</u>	Screen saver	Global object
<u>\$Scrollist</u>	Definition of a scroll list consisting of different EPAM objects	Container definition
#Scrollist	Scroll list, display of objects as a scroll list, e.g. parameter list	
#Signal	Display of states and static images and texts	
<u>#Switch</u>	Latching, touch activated area	
<u>#Textlist</u>	Output of an ASCII text file in a text list	
#Trend	Display of the DataLog file as a trend graph	
#Variable	Display of a numerical/alphanumerical variable	
<u>#VBar</u>	Visual bar with extended functionality	
<u>#VMeter</u>	Visual meter with extended functionality	
<u>#Sys2Plc</u>	Transfer of EPAM <u>system variables</u> to the PLC (e.g. active page)	Global object
#RemoteControl	Remote control of another device via Ethernet (similar to PC- anyware)	

7.2.1.2 Text/File column

The Text/File column contains the text of an object or the name of an image or text file with objectrelated settings (additional worksheet). The Text/File field can be edited as normal. Alternatively, <u>texts</u>, <u>images</u> or text files can be selected easily via the <u>context menu</u> (right mouse button). The texts in the Text/File column represent the default language.

Multiple line texts, line break

Text can be divided up over several lines using the line delimiter '|' (ASCII character 124 or \x7C): Example: Text|1

Special characters

Special characters can be specified with \xHHHH (H=hex code) or as \xHH.

See also

- Managing multilingual texts using the Text worksheet
- Multilingual applications, language selection
- Language tools

7.2.1.3 Font column

The Font column contains the name of a font definition used for displaying the text. Font definitions are managed in the <u>Fontmap</u> worksheet.

A font definition consists of:

- Font type (used Window TrueType Font)
- Style bold, italic,...
- Size

Existing fonts can be selected via the <u>context menu</u>. New font definitions can be defined with the <u>Add/Remove Font</u> buttons.

0

Current font/default font

If a font name is not specified in the Font column, the current font is taken on. The current font is the font of the last object with a font definition. In the EXCEL worksheet, this is the object in one of the previous rows.

7.2.1.4 Columns X, Y, DX, DY

The X, Y, DX, DY columns define the position and the dimension of the object in pixels relative to the point of origin o the current screen page or corresponding <u>Container object</u> (e.g. Group or Scrollist). The point of origin is at the top left.

The fields can contain constants or variables of type INT.

Automatic positioning

The Font, X, Y, DX, DY, Color and Backcolor fields can also remain empty. In this case, these fields take on the values of the previous object. In other words, Font, DX, DY, Color and Backcolor only have to be entered for changes. If the X,Y fields are left empty, the subsequent objects are automatically positioned in succession. The direction in which objects are positioned is in the direction of X, at intervals equal to the value of the current width (DX). If this exceeds the current screen page width setting, there will be a line break to the value of the current object height (DY). If different objects have to be positioned underneath each other within a column, only the X coordinate has to be set to the same value for all objects, the Y coordinate is then defined automatically.

Page Designer

The <u>Page Designer</u> allows you to graphically change the X, Y position values and the DX, DY dimensions of objects easily.

7.2.1.5 Color, Backcolor columns

Color Text color

Backcolor

Background color.

The 32-bit colors can be configured as follows:

Constant

- Defined as name as in <u>UserColor</u>.
- As hex value (HTML color value) #aarrggbb or only #rrggbb

Hex value	Value range	Description
аа	0-FF	Alpha channel defines the opacity of the color, for which 255 or FF corresponds to the maximum opacity and 0 to total transparency
rr	0-FF	Red component

gg	0-FF	Green component
bb	0-FF	Blue component

<u>Variable</u>

• As variable of type DWORD, AARRGGBB (Little Endian)

0

Any colors can be defined via the IDE <u>UserColor</u> function.

9

Current foreground/background color

If a color is not specified in the Color, Backcolor columns, the current color is used. The current color is the foreground or background color of the last object with a color definition. In the EXCEL worksheet, this is the object in one of the previous rows.

7.2.1.6 Format column

EPAM4 supports the following display formats for objects:

Value	Comment			Representation
	No border		Text1	
Border=Button	Button border	type		Text1
Border=Input	Input field bord	der type		Text1
Border=R <x></x>	Rectangle bor (1, 3, 5, etc.)	der type with v	vidth <x> in pixels</x>	Text1
Border=Signal	Display field border type			Text1
Border=Shadow	Rectangle border type with shadow (3D effect)			Text1
Border=RoundR	Rounded rectangle. The following parameters can be specified in brackets and separated by a semi-colon:		mySignal0	
	Parameters	Default	Comment	
	w: <pixel></pixel>	1	Line thickness in p	
	r: <pixel></pixel>	12	Radius in pixels	
	c: <color></color>	Foreground	Color	1
	Example: Border=Round	dR(w:3 ; r:7; c	red)	
fill=gradient	The Backgrou The <i>fill=gradie</i> all border type colon. Eg.: Border=F	nd filled with a ent attribute ca es. It must be s Button, fill=	gradient. n be combined with separated by a gradient	MyButton

7.2.1.7 Action column

The Action column is used for defining the object-specific action to be executed when the object is selected by touch or mouse activation. Possible actions include screen change, change variable value etc.

9

Multiple actions

The & character is used to trigger several actions (Action column).

Example: SetVar=1 & #Page=<name> ...sets the variable to 1 and then switches to screen page name

Alternatively, it is also possible to stack several objects on top of each other. In this case, the covered objects are normally <u>Invisible</u>. This variant is used to set different variables to defined values.



No more actions are executed after the #Page=<name> action!

The Key=<keycode> action can be defined with normal ASCII characters, a key name and with the appropriate key code.

Key name	Key code
F1	Key F1 corresponds to key code \x3b00
F2	Key F2 corresponds to key code \x3c00
F3	Key F3 corresponds to key code \x3d00
F4	Key F4 corresponds to key code \x3e00
F5	Key F5 corresponds to key code \x3f00
F6	Key F6 corresponds to key code \x4000
F7	Key F7 corresponds to key code \x4100
F8	Key F8 corresponds to key code \x4200
F9	Key F9 corresponds to key code \x4300
F10	Key F10 corresponds to key code \x4400
F11	Key F11 corresponds to key code \x4500
F12	Key F12 corresponds to key code \x4600
ESC	Key ESC corresponds to key code \x1b
CursorUp or CUp	Cursor up key corresponds to key code \x4800
CursorDown or CDown	Cursor down key corresponds to key code \x5000
CursorLeft or CLeft	Cursor left key corresponds to key code \x4b00
CursorRight or CRight	Cursor right key corresponds to key code \x4d00
PageUp or PgUp	Page up key corresponds to key code \x4900
PageDown or PgDn	Page down key corresponds to key code \x5100
Home	Home key corresponds to key code \x4700
End	End key corresponds to key code \x4f00
Insert	Insert key corresponds to key code \x5200
Backspace	Backspace key corresponds to key code \x08
Return or Enter	Return/Enter key corresponds to key code \x0d
Delete or Del	Delete key corresponds to key code \x5300

EPAM supports the following key names:

7.2.1.8 Limit1, Limit2 columns

The Limit1 and Limit2 columns define the upper and lower limit value of the variable for the object concerned. The limit value can be defined as a constant, as a <u>system variable</u> or as a <u>PLC variable</u>. Limit value variables must be of the same type as the VarValue variable.



Limit values

The limit values Limit1 and Limit2 are part of the value range. In other words, a value is out of range if the value is less than or greater than Limit1 or Limit2.

7.2.1.9 ActionLimit1, ActionLimit2 columns

The ActionLimit1 and ActionLimit2 columns define the actions that are to be executed when the value is out of the range defined by Limit1 and Limit2.

The ActionLimit1 and ActionLimit2 columns define the actions that are to be executed when the value range defined by Limit1 and Limit2 is overshot. These limit actions are supported by all objects with numerical data types.

The following limit actions are supported by all objects with numerical data types:

ActionLimit1 / ActionLimit2	Description
Alarm:set= <no> Alarm:[<alarmtype>].set=<no></no></alarmtype></no>	Inserts alarm with <no> into alarmhistory. If the value is exceeds the limit. If the value changes to inside the limits again, the timestamp "off" is set.</no>
	Has no effect the any control bits in the alarm buffer!
#Page= <name></name>	The page with the name <name> is opened</name>
Backcolor=< <u>color</u> >	The background color is changed to <color>, for which <color> must be a constant color.</color></color>
Close	The last window opened is closed
Close= <name></name>	The window with the name <name> is closed</name>
Color=< <u>color</u> >	The foreground color is changed to <color>, for which <color> must be a constant color.</color></color>
Exit	The application is closed and the user returns back to the operating system
FastFlash	The object flashes at a frequency of 1 Hz (0.5s on/off)
Flash	The object flashes at a frequency of 0.5 Hz (1s on/off)
<i>Language</i> = <name></name>	Language selection to language <name>. (see also <u>Definition</u> <u>of languages</u>)</name>
SetVar= <constant> SetVar=<variable></variable></constant>	The constant <constant> is assigned to the variable <u>VarValue</u> The variable <variable> is assigned to the variable <u>VarValue</u>. variable> must be of the same type as <u>VarValue</u>, i.e.</variable></constant>
SetVar: <variable1>=<constant> SetVar:<variable1>=<variable2></variable2></variable1></constant></variable1>	The <variable1> is assigned the constant <constant>. The <variable1> is assigned <variable2>.</variable2></variable1></constant></variable1>

ActionLimit1 / ActionLimit2	Description
	variable1> and <variable2> must be of the same data type!</variable2>
SetVar=Limit1	The variable in the <u>VarValue</u> field receives the value of the <u>Limit1</u> column
SetVar=Limit2	The variable in the <u>VarValue</u> field receives the value of the <u>Limit2</u> column
System= <executable> [[options]]</executable>	Any executable file including parameters can be an <executable>. Paths with blanks must be set between double quotation marks.</executable>
	The following options can be stated between square brackets: -d <working directory=""></working>
	Example: system="c:\Program files\viewer\viewer.exe" myfile [-d d:\my documents]
VarPool:sysvarsave	Saves the persistent system variables as <host>.INI in the directory <i>PATH_INI</i>.</host>

Difference to EPAM3

• The following Limit actions are currently not supported: (see also Actions)

- Backlight=<x> replaced by SetVar=<x> to <u>/S/APP/Backlight</u>
- Contrast=<x> no longer required (only for passive LCDs)
- Language=s_mysysvar replaced by SetVar=/S/USR/mysysvar to /S/APP/Language
- Msg=<x> replaced by SetVar:<variable>=<x>
- Load=<x>

7.2.1.10 VarValue column

The VarValue column contains the name of a <u>PLC variable</u> or a <u>system variable</u> containing the actual value of the object. System variables are global variables in EPAM that contain specific values such as the actual page ID of the visualization.

Variable names follow a defined syntax.

The <u>Select User Variable</u> context menu enables you to select the variables conveniently from the <u>UserVar</u> worksheet.

When the project is being compiled, a check is made whether all variables used in EPAM are defined in the UserVar list and whether the data type corresponds to the object data type.



Indexed variable addressing

Variable names can be changed during the runtime and read as indices. See also <u>dynamic variable names</u>

Application:

The indexed variable addressing option, combined with the <u>#Scrollist</u> object, makes it possible to efficiently create parameter lists, such as for any number of axes in a motion control application. In this way, the parameters for several axes, temperature controllers etc. can be entered on only one screen page.

7.2.1.11 VarType column

The VarType column defines the object data type. The <u>context menu</u> shows which variable types can be assigned to an object. During project compilation, a check is made whether the variable type (UserVar) matches the object data type.

Note!

Not all objects support all data types.

The manual assignment of variables or data types not supported by the object may cause runtime errors.

The following basic data types are supported:

Туре	Bit s	Min	Max	Text constant	Comment
BOO L	8	false = 0	true <> 0	 "true" = true "false" = false "0" = false Alphanumerical constants <> 0 = true 	
BYT E USIN T	8	0	255	decimal	
SINT	8	-128	127	decimal	
WOR D UINT	16	0	65535	decimal	
INT	16	-32768	32767	decimal	
dwo RD UDIN T	32	0	4294967295	decimal	
DINT	32	-2147483648	2147483647	decimal	
REA L	32	-3.402823466e+38	3.402823466e+38	Floating point number (decimal)	
DT	32	0 DT#01d01m1970Y 00H00M00S	4294967295 DT#07d02m2106Y06H 28M15S	 decimal DT#<day>d<month>m <year>Y<hour>H<minu tes>M<seconds>S</seconds></minu </hour></year></month></day> Example: DT#18d08m2011Y17H15 M35S => 16 Aug. 2011 17:15:35	 Resolution in seconds since 1.1.1970 Identical to DATE_AND_TI ME
DAT E	32	0 DT#01d01m1970Y 00H00M00S	4294944000 DT#07d07m2106Y	 decimal D#<day>d<month>m< year>Y</month></day> 	 Resolution in seconds since 1.1.1970

Basic types

83

				Example: D#18d08m2011Y => 16 Aug. 2011	
TIME	32	0 T#0h0m0s0ms	4294967295 T#1193h2m47s295ms	decimal T# <hour>h<minutes>m< seconds>s<milliseconds >ms</milliseconds </minutes></hour>	Resolution in milliseconds Complies with IEC 61131-3
LWO RD	64	0	184467440737095516 15	decimal	
LINT	64	- 922337203685477 5808	922337203685477580 7	decimal	
LRE AL	64	- 1.79769313486231 58e+308	1.7976931348623158e +308	decimal with comma	

These data types may possibly not correspond to the identically named data types of the data source. In this case, a conversion is carried out by means of the <u>communication driver</u> which may lead to a loss in accuracy.

Integer data types

The following data types are integer data types:

- BYTE
- USINT
- SINT
- WORD
- UINT
- INT
- DWORD
- UDINT
- DINT
- LWORD
- LINT

Numerical data types

The following data types are numerical data types:

- All integer data types
- REAL
- LREAL

Strings

Туре	Bits of basic type	Comment
STRING	8	
WSTRING	16	UTF16 LE



Strings have a default length of 80 characters. If a different length is required, this must be specified with a colon separator. STRING:30.

Arrays

Туре	IEC	Comment					
INT[<dimension>]</dimension>	ARRAY [0 <dimension>] OF INT</dimension>						
WORD[<dimension>]</dimension>	ARRAY [0 <dimension>] OF WORD</dimension>						
DWORD[<dimension>]</dimension>	ARRAY [0 <dimension>] OF DWORD</dimension>						

0

Start index:	0
End index:	<dimension> -1</dimension>

7.2.1.12 VarState column

The VarState column contains a variable name for the object status. The variable must be of type WORD, INT, UINT or BOOL (only 0 and 1). The object status enables any object in EPAM to take on one of the following states:

Status	Behavior of the Epam object
0	Object is visible and active, i.e. the area X, Y, DX, DY is displayed according to the object
1	Object is not visible and inactive (off), i.e. the area X, Y, DX, DY is displayed with the current background of the current screen page. No actions are executed. Limit values are NOT monitored.
2	Object is visible but inactive (disabled), i.e. the area X, Y, DX, DY is hatched. No actions are executed. Limit values are monitored.
4	The object flashes at a frequency of 0.5 Hz (1s on/off)
8	The object flashes at a frequency of 1 Hz (0.5s on/off)
12	The object flashes at a frequency of 2 Hz (0.25s on/off)

The change of the object status is implemented via the object status variable (VarState) by setting the appropriate value.

0

Object status on screen change

After a screen change, all the objects provided with an object status variable are initialized with the object status invisible and inactive (off). The object is not displayed accordingly until the current object status is read.

This procedure prevents actions from being started accidentally whilst the screen on the target system is being generated! (during simulation on the development environment with no communication, all objects are always shown!)

0

Option VarStateOnOffInverted

If the option *VarStateOnOffInverted* is set, the object is Off (invisible) with *VarState* 0 and On (visible) with 1.

7.2.1.13 Option column

The Option column is used for defining object-related options. Possible options include DX=<width>, Pos=<x>, PWL=<level>, etc.

9

Multiple options

Several options can be configured with the ',' character.

Example: *Pos=Center,PWL=1* ...Centers the position of text/value in the object, object assigned a password level.

7.2.1.14 Function column

#Variable: See Unit systems

7.2.1.15 Init, Exit columns

The Init or Exit columns are used for defining the same object-related actions as in the Action column.

The **Init** action is executed if the object is called for the first time in the page, e.g. page change to a new page.

The Exit action is executed in order to exit a page, i.e. if the object is removed from the memory.

These actions are typically used for setting or resetting variables that are used on specific pages.

7.2.2 AdsHosts table

The *AdsHosts* worksheet is used to define the <u>communication parameters</u> for the communication channels to Beckhoff *TwinCAT* PLCs.

Example:

#Hostn	AdsServ	Delay	Timeo	Reser	DelayOnE	Reser	AdsServe	AmsN	AmsP	Reser	Path
ame	er IP	[ms]	ut[s]	ved	rror[s]	ved	r Port	etId	ort	ved	symbol
											file
PLC1	192.168. 0.99										

Driver DLL: drvAds.dll

Communication with Beckhoff TwinCAT PLCs

Parameters	M/O	Default	Description
Hostname	М		Unique name
AdsServer IP	М		IP address of the Ads server
Delay[ms]	0	200	Delay between two read operations
Timeout[s]	0	3	Maximum time that must not be exceeded during communication. (Connect, Read, Write)
Reserved			
DelayOnError [s]	0	3	Delay after an error. Prevents, for example, too fast reconnections during an online change
Reserved			
AdsServer Port	0	48898	TCP port of the Ads server
AmsNetId	0	<adsserver IP>.1.1</adsserver 	"Ams Net Id" of <i>TwinCAT</i> If no AmsNetId is specified, the Ads server IP is used and extended with ".1.1"

AmsPort	0	801	
Reserved			
Path symbol file	0		Path and name of the imported symbol file

Configuration of the TwinCAT system

In order for the EPAM4-RTS to communicate with a TwinCAT PLC, the EPAM4-RTS must be made known to the AMS router on the TwinCAT system.

TwincAT System Propercies	3	
General System AMS Router PLC Registration	Adding EPA	M4 RTS to the AMS router:
AMS Net Id: 192.168.18.169.1.1	Remote Cor	nection Properties 🔀
Remote Computers	Name:	192 168 18 167 Or
192.168.18.161		152.166.16.161
132.168.18.167	AMS Net Id	192.168.18.167.1.1 Cancel
	Address:	192.168.18.167
Add <u>R</u> emove <u>Properties</u>	Transport:	TCP/IP 🔽 🔲 Slow Connection
		·
OK Cancel Apply		
	Name:	Any unique name
	Ams Net	IP address of the EPAM4 device + ".1.1"
	ld:	
	Address:	IP address of the EPAM4 device
	Transport:	TCP/IP
	Slow	Does not normally have to be set

connectio

n:

7.2.3 Alarm worksheet

See also

• Alarm definition

7.2.4 AlarmList worksheet

See also

AlarmList definition

7.2.5 Authent worksheet

See also

<u>Authent-Definition</u>

7.2.6 AuthentPasswd worksheet

See also

<u>AuthentPasswd</u>

7.2.7 AuthentRoles worksheet

See also

<u>AuthentRoles</u>

7.2.8 DataLog worksheet

See also

Datalog definition

7.2.9 DrvParam worksheet

The *DRVParam* worksheet is used to define the <u>communication drivers</u>. The settings in this worksheet are made via the <u>Project/Communication</u> menu.

Lines beginning with **#** are comments. This means that the RS7 driver is not loaded in the example below.

Example:

#drvname	hostfile	nice	TIMEOUT[s]
S	<u>S.txt</u>	0	60
PLCH	PLCHosts.txt	0	60
#RS7	<u>RS7Hosts.txt</u>	0	60
#ADS	<u>AdsHosts.txt</u>	0	60

Meaning of the individual columns:

- *drvn* Name (ID) of the communication driver *ame*
- *host* Name of the file (worksheet) with the parameters of the communication channels *file*
- nice Relative priority of the communication task to the RTS task. (0 = equal priority; -1 = higher priority, 1 = lower priority)
- *time* Higher-level timeout for monitoring the communication channels. Read, write requests must *out* not exceed this time.
 - The following guideline applies:
 - drvparam.timeout > Host:Retry * Host:DelayOnError * Host:Timeout

7.2.10 FontMap worksheet

The user-specific font definitions are managed in the FontMap worksheet. Fonts are referenced in the EPAM project via the font name <name>.FNT.

Fontmap	Microsoft Windows Fonts			
#Filename	Font	Size	Style	Effects
ARIAL7.FNT	Arial	12	400	

88

ARIAL8.FNT	Arial	14	400	
ARIAL8F.FNT	Arial	14	600	
ARIAL9F.FNT	Arial	15	400	
ARIAL10.FNT	Arial	16	400	
ARIAL10F.FNT	Arial	16	600	
ARIAL12.FNT	Arial	18	400	
ARIAL12F.FNT	Arial	18	600	
ARIAL14.FNT	Arial	22	400	
ARIAL14F.FNT	Arial	22	600	
ARIAL.FNT	Arial	16	400	
COURIER.FNT	Courier New	16	400	
PASSWORD.FNT	Courier New	19	400	
SYS06X11.FNT	Courier New	14	400	
SYS08X16.FNT	Courier New	16	400	
SYSNT72.FNT	Courier New	16	400	
SYSTEM00.FNT	Courier New	12	400	
SYSTEM08.FNT	Courier New	12	400	
SYSTEM16.FNT	Courier New	16	400	
SYSTEM24.FNT	Courier New	16	400	
SYSTEM32.FNT	Courier New	18	400	
SYSTEM48.FNT	Courier New	18	400	
SYSTEM56.FNT	Courier New	32	400	
SYSTEM64.FNT	Courier New	30	400	
SYSTEM72.FNT	Courier New	19	400	
SYSTEM96.FNT	Courier New	24	400	

See also

Definition of fonts

7.2.11 Message worksheet

See also

Message definition

7.2.12 MiifHosts worksheet

The MiifHosts worksheet contains the <u>communication parameters</u> for the *MIIF* communication driver for Simens Simotion.

This communication driver enables communication via Ethernet TCP/IP to Simotion devices. On the Simotion device TP OAMIIF must be installed!

#Hostna	IP address	Delay	Timeout	Retry	DelayOnErr	LogLevel			Symbol file
me		[ms]	[s]		or [s]				

Driver DLL: *drvMiif.dll*

Communication with S7 PLCs via CP or S7-1200 series

Parameter s	M/ O	Default	Description					
Hostname	М		Unique name					
IP address	М		IP address of the Simotion device					
Delay[ms]	0	200	Delay between two read operations (cycle time of communication task)					
Timeout[s]	0	3	laximum time that must not be exceeded when accessing the PLC. Connect, Read, Write)					
Retry	0	3	Number of retries up to error					
DelayOnErr or[s]	0	3	Delay after an error has occurred. Prevents, for example, too fast connections during an online change					
Loglevel	0	0	Levels of error output. Not implemented.					
Path symbol file	0		Path and name of the imported symbol file					

7.2.13 PlcHosts worksheet

The Hosts worksheet contains the <u>communication parameters</u> for the PLC handler communication driver for Codesys PLCs. This communication driver can be used to communicate via Ethernet TCP/ IP with all V2.3 and V3 Codesys PLCs that support this protocol.

#Hostn	Interfac	Delay	Timeo	Ret	DelayOn	LogLe	IP	Ро	Codesys	Applicatio	Path
ame	e type	[ms]	ut[s]	ry	Error[s]	vel	addre	rt	address	n prefix	symbol
							ss				file
PLC1	Gateway	200	3	0	3	0	EPAM	12			
	3						4-	00			
							PLCH				
							OST				

Driver DLL: drvplch.dll

Communication with Codesys V2.3 PLCs

ARTI interface type is used for communication with V2.x PLCs.

Parameters	M/O	Defau It	Description
Hostname	М		Unique name
Interface type	М		ARTI for (Codesys 2.x)
Delay[ms]	0	200	Delay between two read operations
Timeout[s]	0	3	Maximum time that must not be exceeded when accessing the PLC. (Connect, Read, Write)
Retry	0		Not implemented
DelayOnError [s]	0	3	Delay after an error has occurred. Prevents, for example, too fast connections during an online change
Loglevel	0		Levels of error output. Not implemented.
IP address	М		IP address of the PLC or <i>EPAM4-PLCHOST</i> (=Localhost: 127.0.0.1) If the RTS is to communicate with the local PLC and the Ethernet cable is not plugged in, communication is only possible via Localhost. <i>EPAM4-PLCHOST</i> should therefore be set as IP address so that the communication also functions from the simulation.
port	0	1200	IP port of the PLC
Codesys-adr.	0		Not relevant
App. prefix	0		A prefix can be defined that is placed before any variable name. For example for global variables an '.'. If there is no prefix configured at this position, the variable name must be configured everywhere with this prefix.
HW-Type	0		ElauMax
Path symbol file	0		Path and name of the imported symbol file

Communication with Codesys V3 PLCs

Gateway3 interface type is used for communication with V3.x PLCs.

M/O	Defa ult	Description			
М		Unique name			
М		GATEWAY3 for (Codesys 3.x)			
0	200	Delay between two read operations (=cycle time of the communication ask)			
0	3	Timeout when accessing the PLC (Connect, Read, Write)			
0		Not implemented			
0	3	Delay after an error has occurred. Prevents, for example, too fast connections during an online change			
0		Levels of error output. Not implemented.			
М		IP address of the PLC or EPAM4-PLCHOST (=Localhost: 127.0.0.1)			
0	1217	IP port of the PLC			
0	Devic e-	Codesys address of the PLC If empty the RTS uses the device name			
	M/O M O O O O O M O O	M/O Defa ult M 200 O 200 O 3 O 3 O 3 O 3 O 3 O 1217 O 1217 O Devic e- name			

App. prefix	0	A prefix can be defined that is placed before any variable name. For example for global variables an '.'. If a prefix is not configured, the variable must be configured everywhere with a prefix.
Path symbol file	0	Path and name of the imported symbol file

7.2.14 RS7Hosts worksheet

The RS7Hosts worksheet contains the <u>communication parameters</u> for the RS7 communication driver for S7 PLCs. This communication driver enables communication via Ethernet TCP/IP to all S7 PLCs with an Ethernet interface, incl. Soft-PLC AT-S7.

#Hostna	IP address	Delay	DelayOnErr	Retr	Loglev	Optimize	CCh	Rac	Slo	PDU-	Reserved	Symbol file
me		[ms]	or [s]	у	el	(Yes/No)	n	k	t	MaxSiz		
										е		
S1	EPAM4-	200	3	6	0	No	2	0	0		DB_Com	00000001.AWL
	PLCHOST										ment	

Driver DLL: *drvRs7.dll*

Communication w	ith S7 PLCs via	CP or S7-1200 serie	s
-----------------	-----------------	---------------------	---

Parameter s	M/ 0	Default	Description			
Hostname	М		Unique name			
IP address	М		IP address of the PLC or <i>EPAM4-PLCHOST</i> (=Localhost: 127.0.0.1)			
			cable is not plugged in, communication is only possible via Localhost. <i>EPAM4-PLCHOST</i> should therefore be set as IP address so that the communication also functions from the simulation.			
Delay[ms]	0	200	Delay between two read operations (cycle time of communication task)			
Timeout[s]	0	3	Aaximum time that must not be exceeded when accessing the PLC. Connect, Read, Write)			
Retry	0	3	Number of retries up to error			
DelayOnErr or[s]	0	3	Delay after an error has occurred. Prevents, for example, too fast connections during an online change			
Loglevel	0		Levels of error output. Not implemented.			
Optimize	М	No	Optimized communication Yes/No (summary of variables from the same DB)			
CChn	М	16	Communication channel from S7 hardware configuration. • <i>AT-S7: 16</i> • <i>S7-CP</i> : 2 • <i>S7-1200</i> : 0			
Rack	0	0	Rack number from S7 hardware configuration. • <i>AT-S7: 0</i> • <i>S7-CP</i> : 0 • <i>S7-1200</i> : 0			
Slot	0	3	 Slot number from S7 hardware configuration. AT-S7: 3 S7-CP: 0 S7-1200: 0 			
PDU- MaxSize	0	400	Max. PDU-Size, depends on the PLC-CPU: • 240 byte with CPU-3xx and MPI			

			 480 byte with CPU-4xx and MPI
			 960 byte with CPU-4xx and CP4xx
			This parameter may be empty when using an ATS7-Soft PLC.
Variable	Μ	DB_Nu	Prefix for the variable import from the AWL:
name		mber	 DB_Number : Prefix is created from the DB number, e.g. DBxx
			 DB_Title : Prefix is transferred from the DB name (Header)
			 DB_Comment : Prefix is transferred from the DB comment
Path	0		Path and name of the imported symbol file
symbol file			

7.2.15 S worksheet

The S worksheet enables other user-specific system variable hosts to be created, e.g. USR

#Hostname	Persistent <true¦false></true¦false>	Comment
USR	True	

Hostna ...Group of system variables, e.g. USR

me

Persiste...True = System variables are saved with the *varpool:sysvarsave* action in the <Hostname>. nt INI file, e.g. USR.INI

7.2.16 StyleSheet worksheet

The StyleSheet worksheet is used to specify graphical effects (styles) for EPAM objects.

The table consist of following columns;

Object	Property	Value
#widget		

Object:

The column Object is used to select the object (object-ID) where the style has to be applied.

The selector #widget selects all EPAM controls.

Property:

The column *Property* is used to select the property to be changed.

Value:

Apply the setting in the Value column.

Following	effects	my b	e applied:	

Object	Property	Value	Description
#button	effect-pressed	рх	<i>#button's</i> with empty <i>Text/File</i> column and transparente background color, when pressed, invert the background (pixel color). White becomes black and vise versa.

93

vill be
er

7.2.17 Sys2PLC worksheet

See also

Sys2PLC definition

7.2.18 Text worksheet

The Text worksheet is used to centrally manage all texts in a project. The texts can be defined and edited here in several languages. The <u>Languages</u> and <u>Build Language Texts</u> functions can be used to manage languages and to import the language-dependent texts in the Text worksheet or to synchronize the project with the language-dependent texts.

All texts defined with the Text worksheet can be selected via the <u>Add Text</u> context menu of the Text/ File column in the Project worksheet.

The language-dependent texts can be defined in this worksheet for multilingual applications.

Example

1.Default	English	Francais	
Hallo	Hello	Salut	

See also

- Languages
- Build Language Text

7.2.19 Trend worksheet

See also

• Trend definition

7.2.20 UserColor worksheet

The UserColor worksheet contains all color definitions of the EPAM project.

EPAM4 supports ARGB colors. These consist of the four channels alpha, red, green and blue with 8 bits each. A color is represented internally with a 32-bit value. The alpha channel defines the opacity of the color, for which 255 or FF corresponds to the maximum opacity and 0 to total transparency.

UserColor

#Name	Red	Green	Blue	Alpha
transparent				
	0	0	0	255
dark red	128	0	0	255
dark green	0	128	0	255
brown	128	128	0	255
dark blue	0	0	128	255
dark magenta	128	0	128	255
dark cyan	0	128	128	255
grey	192	192	192	255
dark grey	128	128	128	255
red	255	0	0	255
green	0	255	0	255
yellow	255	255	0	255
blue	0	0	255	255
magenta	255	0	255	255
cyan	0	255	255	255
white	255	255	255	255

See also

Definition of colors

7.2.21 UserVar worksheet

The UserVar worksheet is used to define all <u>variables</u>. Variables can be imported from the PLC programming environment via <u>Communication - Symbolfile - Import</u> into the UserVar list. This operation will delete existing variables and create a new list. A check is also made whether all variables used in the <u>Project worksheet</u> have also been defined in the UserVar worksheet and whether the <u>data type</u> is correct.

Example

Variable name	Туре	Rese	Addre	Flag	Comment/	Used	Reserv	Reserv	Reserv	Default
		rveu	55	options	Description	llag	eu	eu	eu	value
/PLCH/PLC/	UINT					1				
ActPageId										
/PLCH/PLC/	STRING					0				
ActPageName	:80									
/PLCH/PLC/	WORD					0				
ActPwl										
/PLCH/PLC/	BOOL					C				
Alarm1										
/PLCH/PLC/	BOOL					C				
Alarm10										
/PLCH/PLC/	BOOL					0				
Alarm11										
/PLCH/PLC/	BOOL					C				
Alarm12										
/PLCH/PLC/	BOOL					0				
Alarm13										

Column	Comment
Variable name	Symbolic variable name
Туре	Variable data type
Reserved	
Address	Address for controls that don't support symbolic variable names, e.g. S7
Options flag	Communication driver specific flags:
	RS7 • <i>raw</i> : no byte swapping (Motorola/Intel-Byte order)
Used flag	Anzahl der Referenzierungen im Projekt. Wenn der Wert > 0 ist, wird die Variable in die _drwlst.txt geschrieben, bzw. in den Variablepool des RTS geladen.
	Variablennamen die erst zur Laufzeit aufgelöst werden, werden von der IDE typischerweise nicht als referenziert erkannt, weshalb der Used-Count auf 0 stehen bleibt, die Variable nicht in den Varpool geladen wird und es somit Laufzeitfehlern kommen kann. Um das zu verhindern, kann ein 'u' in die Zelle geschrieben werden. Damit wird die so markierte Variable immer ins RTS geladen.
Reserved	
Reserved	

Reserved	
Default value	Die Variablen werden im RTS mit 0 initialisiert. Wenn ein anderer Wert gewünscht wird, kann er hier gesetzt werden. Der Default wert wird aber nicht auf die Steuerung übertragen.

Variable name Type	Variable name Variable data type
Size	Size in bytes
Address	Optional address depending on communication driver (e.g. S7)
Options flag	raw: Depending on the communication driver, the value is not converted (e.g.
	Motorola/Intel byte order)
Used flag	1=Variable is used in the EPAM project
Limit1/2 value	Reserved for future expansion
Defined flag	Auxiliary flag for variable import
Default value	Default value. When communication is active the variable values are read from the
	PLC at the start. Default values are not written to the PLC.

7.2.22 VBar worksheet

See also

VBar definition

7.2.23 VMeter worksheet

See also

<u>VMeter definition</u>

7.2.24 LogView worksheet

See LogView definition

7.2.25 UserList worksheet

See UserList definition

7.2.26 RoleList worksheet

See RoleList definition

7.2.27 RecipeList worksheet

See RecipeList definition

7.3 Language-dependent worksheets

The following worksheets contain language-dependent text definitions:

- Project
- <u>Alarm</u>
- Alarm list
- <u>Message</u>
- <u>VBar</u>
- <u>VMeter</u>

Images and text files (*.txt) can likewise be defined as language-dependent. In this case, the file with the same name but with language-dependent content is saved in the appropriate language subdirectory.

7.4 Password protecting an EPAM project

The EPAM Excel project can be assigned a password via Excel - Review - Changes - Protect Workbook.



7.5 Context menu

The context menu can be called by right-clicking a selected cell. Context (object, property) specific popup dialogs provide support for entering valid input:

Online Help

Display of the EPAM Online Help

Add Text

Selection of a text from the text list (Text worksheet)

Add File

Selection of an image or text file. If the file is selected from a different directory, this is automatically copied to the project directory.

Text editor

Call of the text editor with the currently selected text file.

See also

<u>Tool Settings</u>

Graphics editor

Call of the graphics editor with the currently selected image file.

See also

<u>Tool Settings</u>

Formats variable

Selection of the display formats of the variable object.

iat variable	in fact in fact in prove	and the second s	
ot %3.2f		Clear ×	🛛 🗸 OI
ormat		*	🔀 Can
Passed cell value:			
text %f			
Text:			
Before (opt.): Real:			
After (opt.):			
- Flags:			
one	0	+	
no flags			
Number format:			
Width Prec.	enter both (width and precision) or only precision		
3 2	ex. width and prec. (3.2) or only width (3)		
Types:			
%f - Real		•	
Input ex.: 10000.0			
Output ex.: 10000.00			

Fonts

Selection of the font definitions from the Fontmap worksheet.

Colors, Hex

Selection of the color definitions from the UserColor worksheet or as hex constant.

Formats

Selection of the display formats.

Actions

Selection of the object-specific actions.

Limit actions

Selection of Limit actions.

Variables selection list

Selection of variables from the <u>UserVar</u> worksheet. The selection list can be reduced using search filters. The variables list only contains <u>variables</u> of the <u>data types</u> that you can assign to the corresponding object.

EPAM4		
Please <u>s</u> elect:	Search <u>fi</u> lter:	
/PLCH/PLC/Act	Pageld	▼
		✓ <u>O</u> k XCancel
207 Items		.::

VarTypes

The VarTypes menu shows the object-specific data types. Only variables with the object-specific data types can be assigned to the object.

Options

Selection of the object-specific options.

Difference to EPAM3

The context menu in EPAM4 replaces the pull-down selection lists in the cells in EPAM3.

7.6 Page Designer

The *Page Designer* is a quasi WYSIWYG-Editor for container objects like *Page*, *Group*, *Scrollist* etc. It's the replacement of the EPAM3 *Page-Wizard*. Changes, in contrast to the Wizard, are written back to the EXCEL Table only on "Save".

Page Designer	and the second s		
File Edit View			
📃 🗐 🔩 🏓 强 🖬 🕫 🕻	🕽 [밝힌음밖밖师]] [: 수 레 후 쇼 🕸 🖬 🐂 🐂 🙀		
Objects 🗸	#Page=ActionsDiagSig	4 Þ	Properties 📮
Globals × _		*	#Variable
Containers *	Zurück		📲 🛃 Quick Search
{}#Group -			ProjectRow 1074
🗐 #Page 🔹 👻	Action #Daga=TestDaga1		Type VARIABLE
🗧 #Scrollist 👻	Action #Fage_lestFage1		TextFile Variable:%d
-	Action Class	Variable:0 1 11	FontName ARIAL12.FNT
Container Definitions ¥	Action close	variable.0 -1 +1	Y 65
Controle \$	Action Close=TestPage1	Variable:0	DX 100
	Action Close=TestPageT	variable.0 -1 +1	DY 40 Color black
		=	BackColor grey
uu #Bar			Format Border=Input
ab #Button			Limit1
● #DiagSg			Limit2
∎ő #DropdownList			ActionLimit
#LogView			VarValue /S/TMP/diagSig12
≡ #Message			VarType INT
💛 #Meter 💷			VarState
🔁 #MvImg			CFunktion
#RadioButton			Init
== #RecipeList			Exit Comments
👸 #RemoteControl			
#RoleList			v v
Signal	Row: 1074 #Variable Location: X: 460	Y: 65 Size: DX: 100 DY: 40	
Informations			4
[10.05.2013 - 15:25]: Starting page designer [10.05.2013 - 15:25]: Load settings [10.05.2013 - 15:25]: Page designer loaded [10.05.2013 - 15:25]: Selected object: #Variable			^
			· · · · · · · · · · · · · · · · · · ·

Menü

File

Save	All changes are written back to the EXCEL-Table
Save and exit	Write back all changes to the EXCEL-Table and exit the Page Designer
Close	Discard all changes and close the current container
Save as image	Save the current view as image to the predefined directory named like the container
Open preview directory	Open the "Windows Explorer" targeting to the predefined directory
Settings	Open the Page Designer settings dialog
Exit	Exit the Page Designer
Edit	
Undo	Revert the last modification

View

ToolBox Show/hide the following views

Layout

| 🖹 수 🗐 🐨 😐 🏥 唱 唱 % 😘

Align left	Align the selected objects to the left
Align center	Align the selected objects centered
Align right	Align the selected objects to the right
Align top	Align the selected objects to the top
Align bottom	Align the selected objects to the bottom
Move backward	Move the selected object on position backward (Z-order / on row up)
Move forward	Move the selected object on position forward (Z-order / on row down)
Send to back	Move the selected object to the background (Z-Order) Eg. first object in page
Bring to front	Move the selected object to the foreground (Z-Order) Eg. last object in page



Decrease vertical spacing Increase vertical spacing Make vertical spacing equal Decrease horizontal spacing Increase horizontal spacing Make horizontal spacing equal

Size



Make same width	Breite der selektierte Objekte angleichen
Make same height	Höhe der selektierten Objekte angleichen
Make same size	Grösse der selektierten Objekte angleichen.

Zoom



Zoom View Zooming the view

Quick Toolbar



Hotkeys

The menu may be controlled with ALT - Hotkeys

Workboard

The workboard displays the container object and all its childe objects. On ore more objects must be selected in order to change a property. Its possible to change a property of multiple objects at once. Eg. *BackColor*, etc.

Selecting a single object

Mouse-ClickClick on a single object to select it.TAB-TastePress the TAB-Key to select the next objectPropertySelect an object from the combo box in the Properties-ViewGridSelect an object from the combo box in the Properties-View

Selecting multiple objects

Click the objects while the CTRL-Key is pressed. The first object selected is the master, when changing with functions related to layout, size and position.

Clear a selection

Press the ESC-Key

Keyboard

z Undo: Revert the last modification Ctrl c Copy the selected object to clipboard Ctrl v Past the object from the clipboard Ctrl Delete the selected object Delete Move the selected to the right Move the selected to the left Move the selected up Ť Move the selected to the down Ļ Increase the width of the selected object Ctrl

© 2014 Grossenbacher Systeme AG

Ctrl	Decrease the width of the selected object
Ctrl	Increase the height of the selected object
Ctrl	Decrease the height of the selected object
Esc	Clear the selection
Tab I≪→I	Select the next object in Z-Order

Status bar

The status displays information regarding size and position of the selected object.

Objects

Get the objects from the <u>Objects-View</u> with Double-Click or with Drag&Drop.

Properties

Properties		म
#Button		-
Parity Cuick Search	ÎL	
ProjectRow	5	
Туре	BUTTON	
ld		
TextFile	MyButton	
FontName	Arial12.FNT	
Х	73	
Y	47	
DX	98	
DY	45	
Color	black	
BackColor	grey	
Format	Border=Button	
Action		
Limit1		
Limit2		
ActionLimit1		
ActionLimit2		
VarValue		
VarType	WORD	
VarState		
Options		
CFunktion		
Init		
Exit		
Comments		
	······ •	
Format Object format.		

Die *Properties*-View displays the properties of the selected object. Click into the value cell to change a property.

Informations

The Informations-View lists the event protocol.



8 Objects

This section describes all EPAM objects. These are arranged in the following groups:

- <u>Container definitions</u>
- <u>Containers</u>
- <u>Globals</u>
- <u>Controls</u>

8.1 Container definitions

Container objects are objects that contain one or several <u>EPAM objects</u>. Container objects are defined with *\$object*=<name> and used with *#object*=<name>.

8.1.1 \$Group

Group=<name> is used to define a group of associated objects. This enables the user to define his own objects from combinations of basic objects such as <u>#Bar</u> with scale and value etc. The definition is carried out as for a <u>#Page</u> after a blank line. The Group=<name> object type is first given a unique name. The \$ instead of # indicates that this is the definition. After the \$Group definition the objects combined for the group are configured.

The \$Group object definition is used to define the background color and the format:

Paramet ers	Value	M/O	Default	Comment
Object	\$Group = <name></name>	Μ		The \$ instead of # indicates that this is a definition. The object identifier Group is followed by the ID separated by =. A unique name referenced to Group.
Text/File				
Font				
Х				
Y				
DX	Integer	0		Width of the Group object
DY	Integer	0		Height of the Group object
Color				
Backcolor	<u>Color</u>	0	Transparent	Background color: Static or Group parameter (placeholder see below)
Format	<u>Format</u>	0		Type of frame: Static or Group parameter (placeholder see below)
Action				
Limit1				
Limit2				
ActionLim it1				
ActionLim it2				
VarValue				
VarType				
VarState	<variable></variable>			See: <u>VarState column</u>

		May be used switch off the whole group Static or Group parameter (placeholder see below)
Option	VarStateOnOffIn verted	Inverts the On / Off functionality of <u>VarState</u> : VarState = 0 -> Off VarState = 1 -> On Static or Group parameter (placeholder see below)

A #Group object can incorporate any object. However, only the following objects can be assigned parameters via Group:

- #Group
- <u>#Bar</u>
- #Button
- <u>#DiagSig</u>
- <u>#DropDownList</u>
- #Message
- <u>#Meter</u>
- <u>#MvImg</u>
- <u>#Radiobutton</u>
- #Signal
- #Slider
- #Switch
- #Textlist
- #Trend
- #Variable
- #VBar
- #VMeter

Parameters

The objects within a *\$Group* definition can be assigned parameters. Parameters can be assigned by column with the placeholder {%x} (x=1 to n). If several Group parameters are to be assigned, these must be separated by commas. The first parameter then corresponds to the placeholder {%1}. Each further parameter separated by a comma is configured by increasing the number ({%2}). If a comma is to be assigned in a parameter for a called *#Group* object, this parameter must be placed in braces (Example: {text, text}).

Parameters can be assigned as required. In other words, placeholders for which no parameter is assigned are removed. (replaced by an empty string)

Placeholder

A placeholder has the following format: {%<Parameter number>}. The numbering of the placeholders starts for each column with 1.

It's possible to provide the following properties by parameter:

- Back Color
- Format
- VarState
- Option

Example of \$Group definition

Object	Text/File	Font	X [Pixel]	Y [Pixel]	DX [Pixel]	DY [Pixel]	Color	BackColo	Format
								r	
\$Group=m	nyVariable		0	0	200	30	black	grey	
#Signal	{%1}	Arial12.	0	0	200	30	black	transpare	Border=R
		FNT						nt	1
#Variable	{%2}	Arial12.	100	1	50	28	black	grey	Border=Si
		FNT							gnal
#Signal	{%3}	Arial12.	150	0	50	30	black	transpare	
-		FNT						nt	

#Group object example

Object	Text/File	Font	X [Pixel]	Y [Pixel]	DX [Pixel]	DY [Pixel]	Color	BackColo r	Format
#Page=Ini t									
#Page=st art	start	Arial12. FNT	0	0	640	480	black	white	Border=R 1
#Group= myVariabl e	Text,%3d, Einheit	Arial12. FNT	180	175	200	30	black	white	

Display

8.1.2 \$Scrollist

The *\$Scrollist* object enables parameter lists to be designed with standard objects in any form. In combination with the indexed variable addressing option, it is possible, for example, to enter the parameters for several axes on a single parameters screen page.

\$Scrollist=<name> is used to define a list of objects that can then be scrolled within a rectangular area. In other words, the X and Y position of the objects of a scroll list are changed dynamically when the Scrollist object is called (see also <u>#Scrollist</u>=<name>). The definition of the scroll list positions the objects one above the other beyond the size of the screen. <u>#Scrollist</u>=<name> then displays the objects of the scroll list in the defined area. The number of visible objects is automatically calculated on the basis of the line height (Limit2) and the actual dimension.

Example

Object	Text/File	 X	Y	DX	DY	 Limit2
\$Scrollist= scroll1		 0	0	160	200	 50
#Button	myButton1	 0	0	100	50	
#Button	myButton2	 0	50	100	50	
#Button	myButton3	 0	100	100	50	

DX,DY

Define the spread of the scrollable area. The RTS determines the spread automaticaly. Under some circumstances that doesn't work very well.

The option FixedSize tells the RTS to use DX and DY.

Limit1

Limit1 defines the column width in pixels.
Limit2

Limit2 defines the row hight in pixels.

Optionen:

VarValueToScrol IX	If set, <i>VarValue</i> is linked to the horizontal scrollbar. Other wise it's linked to the vertical scrollbar.
FixedSize	If set, <i>DX</i> , <i>DY</i> defines the spread of the scrollable area. Otherwise it's calculated automatically by the RTS
VerticalRibbonL ayout	The controls are lined up vertically Gaps, normally caused by switched off (<i>VarState</i>) objects, are closed automatically by shifting the visible objects vertically together.
HorizontalRibbo nLayout	The controls are lined up horizontally Gaps, normally caused by switched off (<i>VarState</i>) objects, are closed automatically by shifting the visible objects horizontally together.
VerticalScrollBar AlwaysOn	Makes the vertical scrollbar to be always visible
HorizontalScroll BarAlwaysOn	Makes the horizontal scrollbar to be always visible

Advantage

Once a scroll list is defined, it can be integrated in any page with a single line. The position and the dimension of the scroll list is defined when the <u>#Scrollist=<name></u> is called. The number of lines of the scroll list is calculated automatically.

Difference to EPAM3

- In EPAM3 the number of lines must be specified in Limit2.
- In EPAM3 the scroll objects are defined within the page with the Scroll option.
- The position of the objects is relative to the page. In EPAM4 the position is relative to the Scrollist object.
- In EPAM3 only the visible objects are active. In EPAM4 all objects of the scroll list are always active, even if they are not visible (e.g. Limit actions).

8.1.3 \$Scrollist2

The difference between \$Scrollist and \$Scrollist2 is just margnally

1. The objects within Srollist2 may be paramterized through <u>\$group parameters</u>.

2. Following properties must be applied, in contrast to *Scrollist*, in the definition row and may be set through a group parameter from the declaration (as for *group*).

- Back Color
- Format
- VarValue
- VarType
- VarState
- Option

Property	Value	M/O	Default	Comment
<u>Object</u>	\$ <i>Scrollist2</i> = <name></name>	М		The \$ instead of # indicates that this is a

110

				definition. The object identifier Scrollist2 is
				followed by a, in relation to <i>Scrollist2</i> , unique
Toxt/File				name separated by =.
Font				
<u>r ont</u> Y				
<u>∧</u> ∨				
<u>י</u> אַת	Integer	0		Width of the scrollable area. Relevant with
<u> </u>		0		option FixedSize only
<u>DY</u>	Integer	0		Height of the scrollable area. Relevant with option <i>FixedSize</i> only
<u>Color</u>				
<u>BackCol</u> or	<u>Color</u>	0	Transparen t	static or by parameter
Format	Border	0		static or by parameter
Action				
<u>Limit1</u>	Integer			Defines column width in pixel, respectively the horizontal scrollbar step width.
Limit2	Integer			Defines column height in pixel, respectively the vertical scrollbar step width.
ActionLi				
<u>mit1</u>				
<u>ActionLi</u>				
<u>mit2</u>				
<u>varvalue</u>	variable name			scrollbar slider position.
				By setting option VarValueToScrollX VarValue is bound to the horizontal scrollbar.
				statically or by group parameter
VarTupo	Integer type			statically or by group parameter
<u>VarStata</u>	Mariable name	0		May be used to bide the whole serellist?
varstate		0		statically or by group parameter
Option		0		statically or by group parameter
	DX= <n></n>		25	Width of the vertical scroll bar.
	DY= <n></n>		25	height of the horizontal scroll bar. 0 = Hide scroll bar
	FixedSize			If set, <i>DX</i> , <i>DY</i> defines the spread of the scrollable area. Otherwise it's calculated automatically by the RTS, what not always leads to a correct result.
	VarStateOnOffInverte			Inverts the on/off functionality of <u>VarState</u>
	ŭ			<i>VarState</i> = 0 -> Off <i>VarState</i> = 1 -> On
	VarValueToScrollX			Bindes VarValue to the horizontal scrollbar

	VerticalRibbonLayout		The controls are lined up vertically Gaps, normally caused by switched off (<i>VarState</i>) objects, are closed automatically by shifting the visible objects vertically together.
	VerticalSrollbarAllway sOn		Makes the vertical scrollbar to be always visible
	HorizontalRibbonLayo ut		The controls are lined up horizontally Gaps, normally caused by switched off (<i>VarState</i>) objects, are closed automatically by shifting the visible objects horizontally together.
	HorizontalScrollbarAll waysOn		Makes the horizontal scrollbar to be always visible
Function			
Init			
Exit			

8.2 Containers

Container objects are objects that contain one or several EPAM objects.

8.2.1 #Group

The *#Group* object enables a <u>group of objects</u> defined by the user to be used at different locations by means of a single line. Specific properties can be set in the <u>definition</u> by means of parameters.

When a #Group object is called within a page, the defined <u>\$Group objects</u> are displayed at this location with optional parameters:

Parameters	M/O	Value	Default	Comment
Object	М	#Group= <name></name>		Call of the <u>\$Group object</u> <name></name>
Text/File	0	Group parameters		Comma separated parameters for \$Group objects
Font		Group parameters		Comma separated parameters for \$Group objects
х	0	Integer value	0	Horizontal positionOnly constants are permissible.
Y	0	Integer value	0	Vertical positionOnly constants are permissible.
DX	0	Integer value	0	This parameter will be ignored. DX is taken from the Group definition
DY	0	Integer value	0	This parameter will be ignored. DX is taken from the Group definition
Color	0	Group parameters		Comma separated parameters for \$Group objects
Backcolor	0	Group parameters		Comma separated parameters for \$Group objects
Format	0	Group parameters		Comma separated parameters for \$Group objects

Action	0	Group parameters		Comma separated parameters for \$Group objects	
Limit1	0	Group parameters		Comma separated parameters for \$Group objects	
Limit2	0	Group parameters		Comma separated parameters for \$Group objects	
ActionLimit1	0	Group parameters		Comma separated parameters for \$Group objects	
ActionLimit2	0	Group parameters		Comma separated parameters for \$Group objects	
VarValue	0	Group parameters		Comma separated parameters for \$Group objects	
VarType	0	Group parameters		Comma separated parameters for \$Group objects	
VarState	0	Group parameters		Comma separated parameters for \$Group objects	
Option	0	Group parameters		Comma separated parameters for \$Group objects	
Function					
Init	0	Group parameters		Comma separated parameters for \$Group objects	
Exit	0	Group parameters		Comma separated parameters for \$Group objects	

Parameters and placeholders are scoped to their own column! Each column has it's own parameters. The first parameter in each column corresponds to the %1 placeholder in the same column.

It isn't not possible to pass a parameter from one column to an other.

Example:

\$Group definition with two parameters in the Text column

Object	Text/File	
\$Group=Group1		
#Button	{%1}	
#Button	{%2}	

Example:

#Group=Group1 call with parameter

Object	Text/File	
#Page=Testpage		
#Group=Group1	one, two	

> Object #Button {%1} is drawn with text "one", object #Button {%2} with text "two".

8.2.2 #Page

The *#Page* object defines the position and size of the screen page in which the EPAM objects are displayed. The screen page can take on here the size of the entire screen (Full screen) or only part of it (window). The entire screen can also be divided up into <u>subareas (Frames</u>) using several *Page* objects.

Parameters

Object

Column A, object	M/O	Default	Description		
#Page= <name></name>	М		Unique, user-specific <name> of a screen page</name>		

Text/File

<u>Column B, Text/</u> <u>File</u>	M/O	Default	Description
< <u>Title</u> >	0	Empty string	Text string as page title (text is centered). The text can be edited or selected via the <u>Add Text context menu</u> from the <u>Text worksheet</u> .
<title line1 title<br="">Line2></title>	0		Multiple-line text. In this case, the text is left-justified.
< <u>lmage file</u> >	0		The image file is centered on the page. (background image)

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current	optional <u>font</u> for displaying the title text
		font	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants	0	0	Position and dimension of the screen page

Color

Column H	M/O	Default	Description
Font color	0	0	Font color for the title text

Backcolor

Column I	M/O	Default	Description
Background color	0	0	Background color for the screen page

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No	Formats to display the screen page
		border	

Action

Action on a page mainly make sense in the context of gestures. Thus, the actions in the following

table may be prefixed with one of the following gestures .

gesture: swipe:right: <action></action>	Swipe ge	sture to	the right
gesture:	Swipe ge	sture to	the left
swipe:left:			
<action></action>			
gesture:	Swipe ge	sture up)
swipe:up:			
<action></action>			
gesture:	Swipe ge	sture do	wn
swipe:down:			
<action></action>			

Sample:

gesture:swipe:right:#page=info

Spalte K	Beschreibung
#Page= <name></name>	Open page with name <name></name>
#Page= <name>:animation={topin bottomin leftin rightin} [(<duration>)]</duration></name>	Animated page change: To open a page with an animation append <i>:animation=</i> to the page name, followed by type of animation:
	animation=topinshift the page into the display from top toanimation=bottominshift the page from into the display bottoranimation=leftinshift the page from left into the display toanimation=rightinshift the page from right into the display to
	Sample: #Page=pw:animation=topin
	Optionally it's possible to define the duration of the animation. Default ist 600ms.
	Sample: #Page=pw:animation=topin(400)
AlarmList:info= <n></n>	The page <n> configured in the <u>Alarm definition</u> at Alarm Info action of the selected alarm is opened. (1. Action=1, 2.=2,)</n>
AlarmList:[<name>].info=<n></n></name>	Execute <action> on the #AlarmList designated by <name> Thereby it isn't necessary to set <u>/S/APP/AlarmList:Type</u>.</name></action>

Option

<u>Column S</u>	M/O	Default	Description
Page=Dialog	0		This option makes the page modal. In this way, only this page can be operated, and all other pages are disabled until this page has been closed.
ID= <index></index>	0	0	This option sets the ID of the page and the associated system variables to <index>. The permissible value range for <index> is 0-65536.</index></index>
Popup	0		Opens the current page as a popup. In other words, all existing pages are retained and the new page is laid as a

		popup on top of the stack. A page is normally replaced by a new page if they have the same geometry (size and position) and any overlaid pages above it are closed. See also Window handling
<i>Transparency</i> =< <u>color</u> >	0	The < <u>color</u> > specified in an image file is interpreted as transparent. Is only required for image formats that do not support transparency, e.g. PCX In EPAM4 it is better to use the <u>PNG</u> image format instead of this option.

System variables

System variables in conjunction with the #Page object:

- /S/SYS/PageName
- <u>/S/SYS/Pageld</u>
- /S/SYS/PageIdLast
- <u>/S/SYS/NewPage</u>

${\tt L}$ Triggering a screen page change in the PLC

The system variable <u>/S/SYS/NewPage</u> and the <u>#Sys2PLC</u> object enable screen changes to be triggered in the PLC.

	_		
A	-		١.
G		4	
N			٢.
1	-	-	

Frames

A screen page can be divided into different areas (frames) by defining several *#Page* objects. In this way, it is possible to change screen contents independently of each other in the individual areas. (example: See *#Page*=ObjectMeter demo project) This enables global action bars or status indications to be defined at a central point and independently of the page.

Example



Window handling

Screen pages with different dimensions are superimposed on each other and are displayed and refreshed on screen at the same time (Window handling). All objects remain fully operable if they are visible (exception: Option Page=Dialog). A superimposed screen page can be closed with the *close* action or *close*=<name> action if the underlying screen page is larger (DX or DY). The 'close' action has no effect if only one visible screen page is active.

If a screen change takes place (#Page=<name> action) to another screen page with the same dimensions, the existing page is deleted and is replaced by the new screen page. Any superimposed pages (windows) are closed.

Difference to EPAM3

- In EPAM3 objects that are fully or partially covered by a superimposed screen page are designated as invisible and are no longer refreshed. In EPAM4, objects that are fully or partially covered continue to be refreshed (incl. Limit actions) and can be operated if they are visible.
- Frame pages are handled in the same way as in EPAM3. However, EPAM3 frame pages have been found to be output incorrectly with an offset (see <u>bug#603</u>). This error has been fixed in EPAM4.
- In EPAM3 the image file was always displayed at the top left, EPAM4 centers the image if a border is defined.

8.2.3 #Scrollist

The #Scrollist=<name> object enables a scroll list defined beforehand with <u>\$Scrollist=<name></u> to be displayed.

Parameters

Object

Column A, object	M/O	Default	Description
#Scrollist= <name></name>	Μ		<name> of the scroll list to be displayed</name>

X, Y, DX, DY

х, т, вх, вт	, , , _, _,				
Columns D-G	M/O	Default	Description		
Integer constants	0	<u>Autom.</u> positioni ng	Position and dimension of the scroll list.		
Variable	0		Variable name		

Backcolor

<u>Column I</u>	M/O	Default	Description
Background color	0	Current	Background color of the scroll list.
		backgro	
		und	
		<u>color</u>	

Format

Column J	M/O	Default	Description
<u>Format</u>	0	No	Formats to display the scroll list
		border	

Action

Column K	M/O	Default	Description

VarValue

Column P	M/O	Default	Description
Variable	0		Variable for saving the actual position in the list

VarType

Column Q	M/O	Default	Description
Integer data types			Integer data type

Option

Column S	M/O	Default	Description
DX= <width></width>	0	25	Width of the vertical scroll bar. 0 = Hide scroll bar
DY= <height></height>	0	25	Height of the horizontal scroll bar. 0 = Hide scroll bar

Example



8.2.4 #Scrollist2

The *#Scrollist2*=<name> object enables a scrollist2 defined beforehand with <u>*\$Scrollist2*=<name></u> to be displayed.

Scrollist2 is a combination of <u>#Scrollist</u> and <u>#Group</u> thus they are dispensable.

Property	M/O	Value	Default	Comment
Object	М	#Scrollist2= <name></name>		Declaration of <u>\$Scrollist2-Objekt</u> <name></name>
Text/File	0	Parameter		comma separated parameters for inner objects
Font		Parameter		comma separated parameters for inner objects
Х	0	Integer constant INT-variable		horizontal position
Y	0	Integer constant INT-variable		vertical position
DX	0	Integer constant INT-variable		with of visible area
DY	0	Integer constant INT-variable		height of visible area
Color	0	Parameter		comma separated parameters for inner objects
Backcolor	0	Parameter		comma separated parameters for inner

			objects
Format	0	Parameter	comma separated parameters for inner objects
Action	0	Parameter	comma separated parameters for inner objects
Limit1	0	Parameter	comma separated parameters for inner objects
Limit2	0	Parameter	comma separated parameters for inner objects
ActionLimit1	0	Parameter	comma separated parameters for inner objects
ActionLimit2	0	Parameter	comma separated parameters for inner objects
VarValue	0	Parameter	comma separated parameters for inner objects
VarType	0	Parameter	comma separated parameters for inner objects
VarState	0	Parameter	comma separated parameters for inner objects
Option	0	Parameter	comma separated parameters for inner objects
Function			
Init	0	Parameter	comma separated parameters for inner objects
Exit	0	Parameter	comma separated parameters for inner objects

8.3 Globals

Global objects must be designed in the first screen page in the "Project" (*#Page=Init*) worksheet. This page is created automatically with the dimensions DX=0 and DY=0. The Init page is thus defined as a global screen page and is always active in the background, irrespective of the currently displayed screen page.

The following are global objects: <u>#Alarm</u> <u>#Datalog</u> <u>#Password</u> <u>#Recipe</u> <u>#Screensaver</u> <u>#Svs2PLC</u>



Triggering a screen page change in the PLC

In the Init Page, a screen page can be triggered by the PLC, for example, by means of Limit actions for a signal object.

See also

<u>Windows handling</u>

8.3.1 Alarm

The #*Alarm* object is an alarm archive which monitors the alarms defined in the <u>alarm definition</u>. The alarm object is a <u>global object</u>.

Parameters

Object

-			
Column A, object	M/O	Default	Description
#Alarm	М		Alarm handling

Text/File

<u>Column B, Text/</u> <u>File</u>	M/O	Default	Description
< <u>name</u> >.txt	М		<u>Alarm definition</u> with the alarm variables and the alarm message texts The name <name> becomes the alarm type and the ID of the alarm object.</name>

Action

Column K	M/O	Default	Description
#Page= <name></name>	0		Action is executed when alarms come:
			Screen page change to screen page <name></name>

VarValue

Column P	M/O	Default	Description
Variable	Μ		Variable that specifies the alarm buffer

VarType

Column Q	M/O	Default	Description
WORD[]	М		Data type array of WORD (length according to number of alarms)

Option

<u>Column S</u>	M/O	Default	Description
<i>Type</i> = <name></name>	0	Name of the definition file without extensio n ".TXT"	Alarm type (allows the definition of several alarm objects with the same <u>alarm definition</u>)

Structure of the alarm buffer

The alarm buffer has a word-based structure and the start address is defined with the alarm object. Each bit from data word 4 represents an alarm. The maximum number of alarms depends on the

maximum array size that can be defined on the PLC. The last 512 alarms are stored in a ring buffer (alarm history). The alarm history and the current setting (sorting, filter) are saved retentively in the <alarm>.ini file.

EPAM / PLC handshake:

The status bits in the alarm buffer are set from one side and must then be reset by the other side after they have been detected.

For example, EPAM sets [0].1 (alarms acknowledged in EPAM), in response to which the PLC resets this bit to 0 as soon as it has processed the value.

Defining the alarm buffer in the PLC

CoDeSys:

```
Global variables: Example
VAR_GLOBAL
Alarm : ARRAY[0..20]OF WORD
END VAR
```

The alarms can then be addressed via Alarm[x].x.

Step7:

In Step7 it's useful to create an array with a bit structure. This allows the alarms to be addressed transparently as in EPAM. Example: Alarm[x].Bit[x]

```
Alarm ARRAY[0..x]
STRUCT
Bit ARRAY [0..15] BOOL
END STRUCT
```

0

Alarm Array in UserVar

If the S7 alarm variables are created as a bit-structured array, the Raw option must be defined in the UserVar, otherwise the communication driver will swap High/Low bytes.

Variable name	Туре	Size [byte]	Address	Flag options
/RS7/S1/AlarmArray	WORD[130]	260	DB20.DBB0	Raw
/RS7/S1/AlarmArray[0]	WORD	2	DB20.DBW0	Raw
/RS7/S1/AlarmArray[1]	WORD	2	DB20.DBW2	Raw
/RS7/S1/AlarmArray[2]	WORD	2	DB20.DBW4	Raw
/RS7/S1/AlarmArray[3]	WORD	2	DB20.DBW6	Raw
/RS7/S1/AlarmArray[4]	WORD	2	DB20.DBW8	

Simulation of Alarms

See: <u>Alarm Simulation</u>

See also

- AlarmList action
- Alarm action
- Alarm-specific system variables

122 EPAM4-Manual

8.3.1.1 Definition

The alarm variables are assigned alarm-specific properties, actions and information in the <Alarm> worksheet.

The Alarm worksheet has the following structure:

Variable	Alarm number	Text/File	Font	Color	Back color	Alarminfo action	Alarm Helptext	Class
[0].0		1 = Alarm(s) active (EPAM -> PLC)						
[0].1		1 = User has acknowledged all alarms (EPAV -> PLC)						
[0].2		1 = Unacknowledge d alarm(s) present (EPAM - > PLC)						
[0].3		1 = Alarm file saved						
[0].4 - [0].15		reserved						
[1]		Alarm number for acknowledging an individual alarm (EPAM -> PLC)						
[2].0		1 = Acknowledgeme nt of all alarms (PLC -> EPAM)						
[2].1		1 = Disable Alarm action (PLC -> EPAM)						
[2].2		1 = Disable save (PLC -> EPAM)						
[2].3 - [2].15		reserved						
[3]		Alarm number for acknowledging an individual alarm (PLC -> EPAM)						
[4].0	100	Alarm 1	Alarm.fnt	red	black	#Page=Diagno se, Page=Detail10 0	Alarm100.txt	Warning
[4].1	101							
[4].15								
[5].0								

Variable column

Variable specifies the data word and data bit in the <u>alarm buffer</u>. The data words [0] to [3] are reserved for status information. Alarms start from data word [4].

Alarm number column

The Alarm number column defines the alarm number of the corresponding alarm. Alarm numbers must be unique.

Text/File column

The associated alarm text is defined in the <u>Text/File</u> column. Multi-lingual alarm texts can be defined.

Font, Color, Backcolor columns

These columns define the alarm-specific Font, Color and background color.

Action Alarm Info column

The Action Alarm Info column is used to define one or several comma separated alarm-specific actions. The action of the selected alarm in the alarm list can be called using the Alarmlist: Info=<x> button action.

Call alarm info of the selected alarm. **Example** *AlarmList:info*=1 -> #Page=Diagnose *AlarmList:info*=2 -> #Page=Detail100

Action Alarm Helptext column

The Action Alarm Helptext column is used to define an alarm-specific Help text file. The Help text of the currently selected alarm in the alarm list is saved in the */S/SYS/AlarmList[*<name>*].TxtInfo* system variable and can be displayed using the <u>TextList</u> object.

Class column

An alarm may be assigned to a specific class. Followin classes are supported:

Error (Default, if no class is specified) Default behavior.

Warning: Automatic acknowledgment Doesn't affect bit [0].2

See also

- <u>Alarm object</u>
- <u>Alarm list object</u>
- <u>Alarm actions</u>
- <u>Alarm system variables</u>
- <u>Alarm display</u>

8.3.1.2 Alarm handling procedure

The *RTS* cyclically checks the alarm variables and enters alarms according to status with a "Come" *AlarmOn* or "Go" *AlarmOff* time stamp in the <u>alarm buffer</u>. If required, incoming alarms ("Come" alarms) can also be provided with the screen page change action *#Page*=name.

If the alarm buffer is full and a new alarm is generated, an alarm is overwritten in the buffer according to the following criteria:

- 1. If the oldest alarm is inactive and acknowledged, it will be overwritten by the new one.
- 2. If the oldest alarm is inactive and not acknowledged, it is overwritten.
- 3. If there is no inactive alarm, the oldest active and acknowledged alarm is overwritten.

4. If there is no inactive acknowledged alarm, the oldest alarm will be overwritten. (in this case the alarm will be "lost", i.e. it is no longer displayed in the alarm list -> more than 512 active alarms!)

8.3.1.3 Alarm acknowledgement

Alarms can be acknowledged from EPAM and also from the PLC. When an alarm is acknowledged, the acknowledgement time of the acknowledged alarm or all alarms is set.

Acknowledgement via EPAM

Alarms can be acknowledged from EPAM individually or altogether.

 Acknowledging all alarms with <u>Button action</u>: Alarm:[<type>].quitall or Alarm:quitall (depending on /S/APP/Alarm:Type)

This sets bit [0].1 in the status data word (alarm acknowledgement via visualization) and sends it to the PLC. Bit [0].1 must then be reset in the PLC.

Acknowledging alarms individually with <u>Button action</u>: Alarmlist:quit

If alarms are acknowledged individually, the alarm number is set in status word [1]. The status word [1] in the PLC must then be reset.

Acknowledgement from the PLC

Alarms can likewise be acknowledged individually or altogether from the PLC.

• Acknowledge all alarms

Setting the status bit [2].0 (alarm acknowledgement via PLC) acknowledges all alarms.

• Acknowledge alarms individually

Setting the alarm number in the status word [3] causes the individual acknowledgement of the alarm in EPAM. EPAM then resets the status word [3] back to 0. Other alarms can be acknowledged individually afterwards.

8.3.1.4 Alarm display

Alarm messages can be displayed on screen using the <u>#AlarmList</u> object. Several diagnostics options based on the alarm number are also available.

See also

#AlarmList object

8.3.1.5 Exporting the alarm history

The button action <u>Alarm:export={csv{xml}</u> enables the alarm history to be stored as a CSV or XML file in the EPAM data directory PATH_DAT e.g. \StorageCard\EPAM4\DATA.

This is carried out in the following format (CSV):

Export of alarm buffer: myalarm1 @ 2012-01-29 15:03:29 Number of records: 3 sort = lifo No;in[s];out[s];quit[s] 8;1051628587;0;0 3;1051628530;1051628533;1051628539 14;1051628178;1051628591;0

0

**The time stamp is calculated in seconds since 1.1.1970. **The formula =cell/86400+25569 enables the time stamp to be converted in Excel to plain text format.

8.3.2 Authent

The *#Authent* object implements a role-based user management with access protection. Like the *#Password* object, the password level principle (*PWL*) is used to implement access protection. The difference to the *#Password* object is that a user is assigned a role and thus inherits the PWL of that role. The *User/Password* pair is also required for the login.

The Configuration of #Authent has to be accomplished with the following worksheets:

- Authent
- AuthentRoles
- AuthentPasswd

Parameters

Object

_			
Column A	M/O	Default	Description
#Authent	М		Authent object

Text/File

Column B	M/O	Default	Description
< <u>Definition</u> >.txt	М		Name of the Authent definition, object-specific parameters

Action

Column K	M/O	Default	Description
#page= <name></name>	0		<pre>#page=<name> is opened if an object is clicked that is protected (disabled) by the PWL</name></pre>
off			Objects that are protected by the <i>PWL</i> are fully hidden (off) instead of being displayed as disabled

ActionLimit1

Column N	M/O	Default	Description
#page= <name></name>	0		An incorrect password entry (login) initiates a screen page change to #page= <name></name>

ActionLimit2								
Column N	M/O	Default	Description					
#page= <name></name>	0		The page to change the password. Its gonna be opened when the current password has expired or after the first login.					

Option

<u>Column S</u>	M/O	Default	Description
timeout= <time></time>	0		 The current user is logged out after <time> minutes of no operation have elapsed.</time> <time> can be an integer constant.</time> <time> can be a numerical variable. If it is not defined in UserVar or not yet registered, it is created as a WORD.</time>
keep_pW	0		The current user is kept logged in if the password entry is incorrect, otherwise he is logged out.
bitwise=and	0		Links the <i>PWL</i> of the user or the <i>bitwise and</i> role with the PWL of the object (Option: pwl= <n>). see also: <u>#password</u></n>

See also

<u>#Button</u>	Actions for logging users in
<u>Action</u>	and out etc.
<u>System</u>	Variables for logging users in
<u>variables</u>	and out etc.
<u>#UserList</u>	Displaying / editing user data
<u>#RoleList</u>	Displaying / editing role data
<u>Systemvar</u>	/S/SYS/Authent:User
iables	/S/SYS/Authent:Pwd
	/S/SYS/Authent:CurrentUser
	/S/SYS/Authent:
	CurrentRoleName
	/S/SYS/Authent:LastError

Errors

8.3.2.1 Definition

Genei	eneral parameters						
Para	Val	M/	Def	Description			
mete	ues	0	aul				
rs			t				
#Inter	• fil	Μ		Authent is able to connect different backends. The connection is established			

${\small ©}$ 2014 Grossenbacher Systeme AG

faceT ype	•	e Id	through the corresponding interface. Following interfaces are implemented:
		p	 file: The user data is stored locally in a file. The parameters are set under "File Parameter" Idap: The user data is stored in a higher-level <u>LDAP</u> system (e.g. <u>ADAM</u>).

File Parameters

Para	Val	Μ	Def	Description
meter	ues	/0	aul	
S			t	
config -file				Start of file parameters
#roles	<tab< td=""><td>Μ</td><td></td><td>Name of the table with the role definition</td></tab<>	Μ		Name of the table with the role definition
	<u>le>.</u>			
	<u>txt</u>			
#users	<tab< td=""><td>Μ</td><td></td><td>Name of the table with the predefinition of user password</td></tab<>	Μ		Name of the table with the predefinition of user password
	<u>le>.</u>			
	<u>txt</u>			
#Pass		0		New users are created with this password
wordD				
efault				
#Pass	Inte	0	0	New password must be at least <n> characters long</n>
wordM	ger			
inSize				
#Pass	Inte	0	0	Password expires after <n> days and must be changed</n>
wordM	ger			0 = Password never expires
axAge				
#Login	Inte	0	0	Account is disabled after <n> failed login attempts</n>
MaxTri	ger			
als				
#Pass	non	0	non	Password must match the complexity
wordC	low			
omple	high			
xity	high			
	est			

LDAP parameters

Par ame ters	Val ues	M/ 0	Def aul t	Description
conf ig- Idap				Start of the LDAP parameters
#ser vera ddre	IP add res	Μ		(host name)

SS	s		
#ad min_ dn	ST RIN G LD AP DN	Μ	DN of a user with administrator rights for editing users
#ad min_ pw	ST RIN G LD AP DN	Μ	Password for the Admin
#peo ple_ dn	ST RIN G LD AP DN	Μ	Base DN for People
#role s_dn	ST RIN G LD AP DN	Μ	Base DN for Roles

8.3.2.2 AuthentRoles

This worksheet is relevant only for interface-type *file*. It is used define the user roles with the corresponding password level.

Тад	Wert	M/O	Default	Beschreibung
#ld	String	Μ		Eindeutiger Name der Benutzer-Rolle, ist gleichzeitig der Rollenname (/S/SYS/Authent:CurrentRoleName) für die Default-Spache
pwl	Ganzzahl	0	0	Passwort-Level, siehe auch Option PWL= <level></level>
reserved				
reserved				
reserved				
<languag e></languag 				Rollennamen (/S/SYS/Authent:CurrentRoleName) in der jeweiligen Sprache

Beispiel:

#ld	pwl	reserved	reserve d	German
Operator	5			Bediener
Tool Setter	10			Einrichter

Service- Man	20		Service

8.3.2.3 AuthentPasswd

Predefined users are configured in this worksheet. These users can not be deleted on the RTS. Typically used to define accounts for service technicians.

Tag	Wert	M/O	Default	Beschreibung
#loginna me	STRING	М		Distinc name, (/S/SYS/Authent:User, /S/SYS/Authent: CurrentUser)
passwol	STRING	0		Password, encoded saved
role	STRING	М		Id of a define <u>Role</u>
real name	STRING	0		Long name

Beispiel:

#loginna me	passwd	role	real name	
wernerb	geheim	Service	Werner Beinhart	

Users, created during runtime are save in PATH_INI/AuthentPasswd.pwd

Errors 8.3.2.4

Bei Fehlern nummern werden in die Systemvariable /S/SYS/Authent:LastError geschrieben. Klartext kann z.B via #Message-Objekt angezeigt werden.

Error numb er	Text	Comment
0	No error	
1	Incorrect user	Authent:login failed because /S/SYS/User or /S/SYS/Pwd is incorrect
	name or	
	password	

Error numbers for *#InterfaceType* : file

2	Account disabled	Authent:login failed because the user account is disabled
3	Account is fixed	<u>Authent:changePwd</u> has failed because the account cannot be changed (fixed).
4	New password is too short	<u>Authent:changePwd</u> has failed because the new password is too short
5	New password is not complex enough	<u>Authent:changePwd</u> has failed because the new password is not complex enough
6	New password is the same as the old password	<u>Authent:changePwd</u> has failed because the new password is the same as the old one
7	Role does not exist	The user could not be assigned to the role because the role does not exist
8	User does not exist	The user could not be assigned to the role because the user does not exist
9	Account is fixed	The user could not be assigned to the role because the account can not be changed (system account).
10		

8.3.3 DataLog

The #DataLog object is used to log PLC data/variables in a DataLog file. The data entries are in ASCII text or binary format. The columns are separated by a separator. Each entry takes up one line and is accompanied with a time stamp (see also Exporting alarm history). DataLog is a global object . One or several #DataLog objects can be defined in an EPAM project.

Parameters

Obiect

•			
Column A, object	M/O	Default	Description
#DataLog	Μ		Logging PLC data/variables in a DataLog file

Text/File

<u>Column B, Text/</u> <u>File</u>	M/O	Default	Description
< <u>datalog.txt</u> >	М		DataLog definition with the definitions of the logged data.

Option

Column S	M/O	Default	Description
<i>Type</i> = <name></name>	0	Name of the definition file without extensio n ".TXT"	Datalog type (allows the definition of several DataLog objects with the same <u>DataLog definition</u>)

VarValue

Spelte D M/O Default Beechreibung	
Sparte P M/O Default Beschreibung	

Group-Parameter	0	Instead of a variable, one ore group parameters may be
		defined. They replace the placeholders in the variable list of
		the datalog definition (like Group). Thereby one datalog-
		definition may be used for multiple #Datalog objects.

See also

Datalog action

Difference to EPAM3

 In EPAM3 the DataLog variables were transferred in a structure. In EPAM4 individual variables are read from the PLC. The PLC project may therefore also have to be adapted in certain circumstances.

8.3.3.1 Definition

The variables and properties for the data log are defined in the <datalog> worksheet. The definition consists of the header and the variable list.

The header consists of a parameter set. The header starts with the first row beginning with # and ends with the first line no longer beginning with #.

Tag	Valu e	M/O	Defaul t	Description	
#Size	Deci mal	0	4	Maximum size of the log file in kB. If the file size is exceeded, the oldest value in the log file is overwritten. (ring buffer)	
#File	Strin g	0	<definit ion>. log <definit ion>. idx</definit </definit 	Name of the log and index file (contains the actual position in File -> Ring buffer). If this parameter isn't defined but the option <i>Type=<type> type</type></i> will be the name of log and index file. <type>.log <type>.idx</type></type>	
#Separ ator		0	<table by="" se<="" second="" td="" the=""><td>Column separator, one character</td></table>	Column separator, one character	
#dt	Deci mal	0	0	Time interval for log entry in [s], if > 0. Alternatively the data logging can also be initiated via the Control variable from the PLC.	
#Head er	Strin g	0		Header in log file	
#Time Format	< <u>form</u> <u>at</u> >	0	%10lu	A special format can be defined for the time stamp in the first column.	
#Contr ol	Varia ble	0		Control variable of type DWORD. If this variable is not defined, each value change is logged but at a maximum rate of one record per second. The variable name may contain group placeholders. The are replaced by the parameters defined in the <i>VarValue</i> cell of <i>DataLog</i> object.	
#Time Stamp	Varia ble	0		Variable for the time stamp (first column). Must be of type DWORD. If this variable is not configured, the EPAM system time is logged. The variable name may contain group placeholders. The are replaced by the parameters defined in the <i>VarValue</i> cell of <i>DataLog</i> object.	
#Busy Cursor	{on¦of f}	0	off	The BusyCursor (hour glass) is displayed during an export/save operation.	
#Expor	<	0		Automatic export if <format> is defined. The same rules apply to</format>	

t	form at>			<format> as to #variable for type DT. The entry for <format> with the actual time forms the name for the export file. Each time a log entry is written, the name is generated using the actual time. If the resulting text or file name changes, the Datalog file is exported under the new name.</format></format>
				One export per day sample:
				log1-%[yy-mm-dd]DT.csv → log1-12-03-09.csv
				Automatic exports my be defined for: hourly, 12-hourly, daily, weekly, monthly, yearly.
				The file name can be given an absolute path. Otherwise the file is exported to PATH_DAT.
				If the definition is used for multiple <i>#Datalog</i> objects, (empty <i>#File</i> parameter) use the placeholder <i><type></type></i> to integrate the type name into the filename.
				Sample:
				<type>-%[yy-mm-dd]DT.csv → log1-12-03-09.csv</type>
#Auto Export	{on¦of f}	0	off	Use to disable the automatic export (see #Export). Typically used if the export will be trigged by the PLC with Export-Bit in the Control-Variable.
#LogFi IeForm at	{ascii ¦utf16 ¦binar y}	0	ascii	 File format: ascii:WSTRINGs can not be logged, the log file is accordingly smaller. utf16:WSTRINGs can also be logged. (not yet implemented) binary:Neither STRING nor WSTRING can be logged. An *.idx

Variable

The variables to be logged are then specified after the header parameters.

Variable	VarType	Format	Comment
Variablenam	Data type	Variableforma	Comment
<u>e1</u>		<u>t</u>	
Variablenam			
e2			

Format is optional, if not defined the default format will be used.

The variable name may contain group placeholders. The are replaced by the parameters defined in the *VarValue* cell of *DataLog* object

Sample:

VarValue	Drivel
Varible	/PlcH/Plc1/{%1}.w1
\rightarrow	/PlcH/Plc1/Drive1.w1

Control variable

Bit	Value	Meani ng	Description
0	16#00 00001	Trigger	The PLC sets the Trigger Ctrl bit to cause EPAM to start logging the Datalog entries (#dt set or > 0) or to log only one Datalog entry (#dt not set or 0). In the latter case, the RTS resets the Trigger bit to confirm that the Datalog entry was logged.
1	16#00 00002	Export	PLC sets the Export Ctrl bit to cause EPAM to export the Datalog to PATH_DAT. The RTS resets the bit to confirm action.
2	16#00 00004	Reset	PLC sets the Reset Ctrl bit to cause EPAM to delete the Datalog file in the EPAM log directory (PATH_LOG -> Ramdrive). The RTS resets the bit to confirm action.
3	16#00 00008	Save	PLC sets the Save Ctrl bit to cause EPAM to save the Datalog file in the EPAM log directory (PATH_DAT). The RTS resets the bit to confirm action.
4	16#00 00010	HMI- Reset	EPAM sets the HMI Reset Ctrl bit to notify the PLC that the Datalog file in the EPAM log directory (EPAM Ramdrive) was deleted with the <i>Datalog:[<name>].</name> delete</i> button action. The resetting of the HMI Reset Ctrl bit must be carried out by the PLC.
5	16#00 00020	HMI- Save	EPAM sets the HMI Save Ctrl bit to notify the PLC that the Datalog file was saved in the EPAM log directory (PATH_DAT) with the <i>Datalog:</i> [<name>].save button action. The resetting of the HMI Save Ctrl bit must be carried out by the PLC.</name>
6	16#00 00040	HMI- Export	EPAM sets the HMI Export Ctrl bit to notify the PLC that the Datalog file was exported to PATH_DAT with the <i>Datalog:[<name>].export</name></i> button action. The resetting of the HMI Export Ctrl bit must be carried out by the PLC.

Triggering the log function

1. #dt set, or > 0:

- The DataLog operation is started by setting the Trigger Ctrl bit in the PLC. Data is saved cyclically every x seconds.
- The DataLog operation is stopped by resetting the Trigger Ctrl bit in the PLC.

2. #dt not set or 0:

- A DataLog entry is saved by setting the Trigger Ctrl bit in the PLC.
- If the DataLog entry was written, EPAM then resets the Trigger Ctrl bit.



Important

All lines in a DataLog file must have the same length! For the Variable format observe the max. length of the data type!

Example

Header	Value	Comment
#size	200	Size of Logfile in KB
#file	datalog1.csv	Logfile name
#separator	. ,	Separator between columns
#dt	1	Log interval in [s]
#timeformat	%lu	time format

#control	/PLCH/PLC1/GlobalDatalog.	Control variable	
	DataLog1.Ctrl	DWORD	
#timestamp	/PLCH/PLC1/GlobalDatalog.	Time variable	
	DataLog1.Timestamp	DWORD	
Variable	VarType	Format	Comment
/PLCH/PLC1/GlobalDatalog.	BOOL	%1u	BOOL variable (unsigned decimal
DataLog1.BoolDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	BOOL	%1u	BOOL variable (hexadecimal
DataLog1.BoolHex			representation)
/PLCH/PLC1/GlobalDatalog.	BYTE	%3u	BYTE variable (unsigned decimal
DataLog1.ByteDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	BYTE	%2x	BYTE variable (hexadecimal
DataLog1.ByteHex			representation)
/PLCH/PLC1/GlobalDatalog.	WORD	%6hu	WORD variable (unsigned decimal
DataLog1.WordDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	WORD	%4hx	WORD variable (hexadecimal
DataLog1.WordHex			representation)
/PLCH/PLC1/GlobalDatalog.	DWORD	%8lu	DWORD variable (unsigned
DataLog1.Dw ordDecimal			decimal representation)
/PLCH/PLC1/GlobalDatalog.	DWORD	%8lx	DWORD variable (hexadecimal
DataLog1.Dw ordHex			representation)
/PLCH/PLC1/GlobalDatalog.	SINT	%4d	SINT variable (decimal
DataLog1.SintDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	INT	%6d	INT variable (decimal
DataLog1.IntDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	DINT	%12ld	DINT variable (decimal
DataLog1.DintDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	USINT	%3u	USINT variable (unsigned decimal
DataLog1.UsintDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	UINT	%5hu	UINT variable (unsigned decimal
DataLog1.UintDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	UDINT	%12lu	UDINT variable (unsigned decimal
DataLog1.UdintDecimal			representation)
/PLCH/PLC1/GlobalDatalog.	REAL	%20.4f	REAL variable (floating comma
DataLog1.RealDecimal			representation)

8.3.4 Password

The *#Password* object provides a password management function. Up to 32767 authorization levels can be implemented with the password management function. Each object can be assigned a specific password level using the *PWL*=<level> option. The password level after a program start is 0. Entering the master password (Option: *Master_PW*=<x>) sets the highest authorization level (32767). Passwords with appropriate authorization levels 1, 2, ... can be defined with the system variables /S/APP/password_1, /S/APP/password_2, ... of type WSTRING. The *PWL*=<x> button action enables the current authorization level to be reset, for example when leaving a screen page. Access is allowed if the current password level >= the PWL option of the object.

Parameters

Obje	ect

-			
<u>Column A, object</u>	M/O	Default	Description
#Password	М		Password management

Action

<u>Column K</u>	M/O	Default	Description
	0		Password-protected objects are visible but are inactive (disable)
#Page= <name></name>	0		Screen page change to screen page <name> if a password protected object is actuated (normally the page which</name>

		contains the password input dialog). If the password is successfully entered, the action of the password-protected object is NOT automatically executed. Password-protected objects are visible and active.
Off	0	Password-protected objects are invisible and are inactive (off)

ActionLimit1

Column N	M/O	Default	Description
#Page= <name></name>			Screen page change to screen page <name> after the password is entered incorrectly (only in conjunction with #<i>Page</i>=<name> action)</name></name>

VarValue

Column P	M/O	Default	Description
Variable	М		Variable with actual password

VarType

Column Q	M/O	Default	Description
WSTRING	М		WString data type

Option

Column S	M/O	Default	Description
Bitwise=AND	0		PWL is interpreted bitwise and not according to the value of the authorization level
Master_PW= <passw ord></passw 	0		Definition of the master password: Password with highest authorization level
<i>Timeout</i> = <min></min>	0	0 (inactive)	<min> Time as constant or numerical variable in minutes without touch event until the current authorization is automatically reset (PWL=0)</min>
Keep_PWL	0		Keep active authorization level after wrong password input



Option Bitwise=AND

With this option it is possible to use the 15 bits of the PWL for 15 authorization levels which can be configured to access the functions in a matrix.

System variables password_1, password_2, ... of type WSTRING can be used to define passwords for the relevant authorization levels 1 (Bit0=1), 2 (Bit1=1),

The current PWL is ANDed with the object-specific PWL:

Access allowed if: (current PWL AND PWL option) > 0

Example

PasswordBit	 -bit3	-bit2	-bit1	-bit0		EPAM project
Curr. PWL	8	4	2	1		PWL option
Function/level	Master	Service	Technicia	Operator		
			n			
Screenpage1	1	0	0	1] →	9 (=0x09)
Screenpage2	1	0	1	0]→	10 (=0x0A)

Screenpage3	1	1	0	1		13 (=0x0D)

The service has access to Screenpage3, but not Screenpage 2 and 1.

The operator has access to Screenpage1 and 3, but not to Screenpage2.

At the login the current PWL is set accordingly (e.g. Service Bit2=1 -> PWL=4). This makes all objects accessible that have Bit 2 = 1 in the PWL option.

System variables

Name	Туре	Description
<u>/S/SYS/PWL</u>	WORD	Current password level
<u>/S/SYS/User</u>	WSTRING	Contains /S/APP/User_ <level>. <level> = /S/ SYS/PWL</level></level>
/S/APP/Password_ <level></level>	WSTRING	Password for level <level></level>
/S/APP/User <level></level>	WSTRING	User name for level <level></level>

Difference to EPAM3

- Calculation of the password from day and month (day * month + day) currently not implemented.
- Option SysPW=Off not implemented

8.3.5 Recipe

The *#Recipe* object is used for managing recipes with the <u>Recipe definition</u>. The Recipe object is a <u>global object</u>.

The recipe object enables a defined variable set to be saved and loaded. This variable set consists of recipe variables. The actual values of the variable set are saved in the file *ACTUAL.XMLA*. The recipe variables are defined in the <u>Recipe definition</u>. Several recipe objects can be created. Each recipe object has its own definition file. The unique name of the recipe type is formed from the name of the definition file.

Parameters

Object						
Column A, object	M/O	Default	Description			
#Recipe	М		Recipe handling			

Text/File

<u>Column B, Text/</u> <u>File</u>	M/O	Default	Description
< <u>recipe.txt</u> >	М		Recipe definition with the recipe variables.

Action

Two comma separated Actions may be defined: [[action1],action2]

The first action is executed with the <u>button action</u> Recipe:[<type>].csave for confirmation if the recipe file already exists. A <u>runtime error</u> is displayed if this action is not configured

The second	action is	executed	whenever a	a recipe l	has been	saved s	uccessfully	/ .
								, ·

Column K	M/O	Default	Description
#Page= <name></name>	0		Change to screen page <name></name>

Close	0	Close the topmost page

ActionLimit1

Spalte K	M/O	Default	Description
<i>#Page</i> = <name></name>	0		Change to screen page <name> if on <u>Button action</u> <i>Recipe:[</i><type><i>].{csave</i> <i>save</i>} the root directory of the target path (<u>/S/APP/Recipe:Path</u>) doesn't exist. This may happen, if the target directory is located in a memory stick, but the memory stick isn't connected. Eg. : /storageCard2</type></name>
			If action isn't defined a system runtime error pops up.

ActionLimit2					
Spalte K	M/O	Default	Description		
#Page= <name></name>	0		Change to screen page <name> if on <u>Button action</u> <i>Recipe:[</i><type><i>].Load</i> the recipe file to load doesn't exists.</type></name>		
			If action isn't defined a system runtime error pops up.		

VarValue

Column P		M/O	Default	Description	
Variable		М		Variable as Status/Control word	
Control/Sta	tus word				
Value	Direction	Desc	Description		
1	PLC- >EPAM	PLC I EPAN value:	PLC requests a recipe download. EPAM is required by the PLC to reload the current recipe or the recipe values modified by the user and to write it to the PLC.		
2	EPAM- >PLC	Eparr comp	Epam indicates to the PLC that the request (Download/Upload) is completed.		
3	PLC- >EPAM	PLC The a	PLC requests an upload of recipe variables from the PLC. The actual values are saved in the ACTUAL.XMLA file.		
4	EPAM- >PLC	Eparr	Epam indicates to the PLC that the download is running.		
5	EPAM- >PLC	Eparr	Epam indicates to the PLC that the upload is running.		
6	PLC- >EPAM	PLC overw	PLC requests that the recipe /S/APP/ <recipetype>_file is saved or overwritten.</recipetype>		
7	PLC- >EPAM	PLC down	PLC requests that the recipe /S/APP/ <recipetype>_file is loaded and that download is then carried out.</recipetype>		

VarType

Column Q	M/O	Default	Description
WORD	М		The integer data types are supported

UINT		
INT		

Option

Column S	M/O	Default	Description
		Downloa d ACTUAL .XMLA	Recipe values from ACTUAL.XMLA are written to the PLC on EPAM start. ACTUAL.XMLA contains the actual state of the recipe variables, i.e. also values that were changed manually by the user for example.
NoDownload	0		When EPAM is started, no data is transferred to the PLC. ACTUAL.XMLA is not created.
NoActual	0		Recipe values of the last loaded recipe are written on EPAM startup to the PLC . If variable values were manually changed by the user and not saved in the recipe, these will be lost or overwritten again with the recipe values. ACTUAL.XMLA is not created.

See also

Recipe action

<u>RecipeList action</u>

Difference to EPAM3

• The options Filename=Auto and Filename=Auto10 are currently not supported

8.3.5.1 Definition

All recipe variables in the <recipe> worksheet are defined with type and an initial value if necessary. The <recipe> worksheet has the following structure:

Variable	VarType	Value
#Recipe=Default		Path=
/ <drv>/<host>/MyRecipeVar1</host></drv>	WORD	123
/ <drv>/<host>/MyRecipeVar2</host></drv>	WORD	345

0

System variables in recipes

System variables can be defined in the recipe as recipe variables and also as values. In this case the actual value of the system variables is saved in the recipe and written to the PLC if necessary.

9

Consistency of recipe files

Recipe files are saved in XML format to ensure data consistency. The recipe files are assigned an ID for project name, version (from Project Settings), recipe type and number of variables

- Only recipes with a corresponding project name can be loaded
- If the recipe files are different (xml does not correspond to the recipe definition), an error message is output (Runtime Error). The version of the recipe file is displayed.
 - Cancel: The recipe is not loaded

Ignore: Recipe variables with the same name and data type are loaded. Non-existent variables are ignored and skipped.

New variables that are not present in the recipe file remain unchanged. For variables with different data types, a type conversion of the value is executed from the old type to the new type.

For string variables with different string lengths, only what is possible is accepted (with smaller string lengths, only as many characters as the new one has space)

- The process with different versions is written in the EPAM log (version of the recipe file, variable with type conflict or non-existent variable)
- Recipe files can be deleted with the Delete button (Delete=Cancel and delete file); Cancel and Ignore does not delete the file

Consistency of recipe values

The saving and loading of recipe data is NOT synchronous with the PLC cycle! The data consistency over all recipe values must be examined via the recipe status in the PLC. A recipe is fully loaded if the recipe status is 2.

Difference to EPAM3

• Multi-level recipes are not yet supported

8.3.5.2 Recipe management

The variables in the <recipe> worksheet (MyRecipe.TXT file) define the process variables required for a recipe in the form of name, type and value. The default recipe MyRecipe.TXT contains the default values for the specified variables (value=default value). The recipe variables are normally created as global objects (see also <u>global objects</u>) and initialized with the default values. Any change in a recipe variable is monitored, and the modified values are stored retentively in the ACTUAL.XMLA file. The next time that EPAM is started, the current variable values are therefore reloaded and also transferred to the PLC (default). This procedure can be modified using the different options.

Several recipe objects with different recipe types (Type) can be defined. For example, recipes for product-specific settings and machine-specific configurations can be managed separately.

Creating the recipe directories

Recipes are stored in directories for specific recipe types. The specific directories for MyRecipe recipe types are automatically created in the EPAM recipe directory *PATH_REC*. Example

Recipe type MyType1 in directory *PATH_REC*\MyType1\ Recipe type MyType2 in directory *PATH_REC*\MyType2\

Loading a recipe

Recipes are stored with the file extension *.XML. The <u>/S/APP/Recipe[<type>].file</u> system variable can be used for entering the file name of an existing recipe file (*.XML) (without file extension). The <u>Recipe:[<type>].load</u> action is used to load the variable values of the recipe file defined by <u>/S/APP/</u><u>Recipe[<type>].file</u>.

The <u>#RecipeList</u> object offers a more user-friendly option. This enables a recipe to be selected and loaded from a list of existing recipe files using the <u>RecipeList:load</u> action

Saving a recipe

Specifying a file name in the system variable <u>/S/APP/Recipe[<type>].file</u> and an optional recipe type (system variable <u>/S/APP/Recipe[<type>].name</u>), as well as using the <u>Recipe:[<type>].save</u> action enables the current values of the recipe variables to be stored in a new recipe file (*.XML). Existing files are overwritten.

Recipes can also be saved using the <u>#RecipeList</u> object. The <u>Recipe:[<type>].csave</u> action initiates a prompt whether the file already exists. In this case, the screen page that is defined in the recipe

object concerned is called.

Creating a recipe in EXCEL

The Recipe worksheet enables user-specific recipes to be defined in EXCEL starting from column D and automatically generated with <u>Build</u>. The following entries can be made for this from column D: Cell D1: Name of the recipe file without extension

Cell D2: Comment

Cell D3: Recipe name #Recipe=myName

From cell D4: Recipe values corresponding to the defined recipe variables (same as for Value column)

Displaying recipe files with a XML Viewer

Since recipe files are saved as XML files, recipe files may be displayed with a common XML viewer or editor. The formatting of the recipe file may be controlled by a XSL stylesheet. The name of the XSL stylesheet must match the name of the recipe type.

See also

- #RecipeListobject
- Recipe actions
- RecipeList actions

8.3.6 ScreenSaver

The #ScreenSaver object is used to provide a screen saver and to prevent operating errors. A text/ image is displayed on screen and the backlight reduced after defined times. The Backlight is reduced to 50% or to the value of <u>/S/APP/BacklightDim</u>, if the value is > than 0.

Parameters

Object

Column A, object	M/O	Default	Description		
#ScreenSaver	М		Screen saver		

Text/File

<u>Column B, Text/</u> <u>File</u>	M/O	Default	Description
	0		If an image/text is not specified, only the backlight is dimmed.
<image/> , <image/> ,	0		The <u>images</u> are displayed on the screen, the image changes after each click. Any number of images can be configured.
<text>,<text>,</text></text>	0		The texts are displayed on the object, the text changing after each click. Any number of texts can be configured, also multiple lines
<image/> , <text>,</text>	0		Text/image can be combined as required

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current	Optional <u>font</u> for displaying text.

X, Y, DX, DY

Columns D-G	M/O	Default	Description
		Dimensi	The size of the ScreenSaver is always the same size of the
		on or the	screen.
		screen	

Color

Column H	M/O	Default	Description
<u>Color</u>			Font color in conjunction with text

Backcolor

<u>Column I</u>	M/O	Default	Description
<u>Color</u>			Background color (can also be transparent)

Format

Column J	M/O	Default	Description
	0	Random	If a format is not set, the text or the image from Text/File is randomly positioned on the page every two seconds.
Move			If Move is used, the text or the image of Text/File is moved every second from the top left to the bottom right of the page.

Action

Column K	M/O	Default	Description
	0	Click	If no action is specified, the object is closed by clicking any position on the screen, unless several texts or images are configured under Text/File.
Click=inside			If this action is set, the object is only closed if the text or the image is clicked. If several texts or images are configured under Text/File, the user must always click the text or image within four seconds in order to close the screen saver. This is designed to prevent accidental operation.

VarValue

Column P	M/O	Default	Description
<variable></variable>	0		If the value of the variable changes to a value greater than zero, the screen saver is closed and the variable is reset to zero. See also <u>VarValue</u>

VarType

<u>Column Q</u>	M/O	Default	Description
Integer data types	0		All numerical <u>data types</u> can be used.

VarState

Column R	M/O	Default	Description
<variable></variable>	0		A variable can be configured here. If its value equals zero, the object behaves normally (On status), if the value is one,

	the #ScreenSaver object is closed and deactivated (OFF
	status).

Option

Column S	M/O	Default	Description
<i>Timeout</i> = <min></min>	0	5	This option enables the first timeout to be set as a constant or a numerical variable. It is set to 5 minutes if nothing is specified. The backlight is reduced after this time.
<i>Timeout2</i> = <min></min>	0		This option sets the second timeout as a constant or a numerical variable. This timeout switches off the backlight.



Deactivating the screen saver in the PLC

The screen saver can be deactivated for important events from the PLC by setting the variable in VarValue.

Difference to EPAM3

In EPAM3 only Alarm, DataLog, and Recipe global objects are updated during the display of the text or image with the screen saver active. In EPAM4 all objects are always updated. In other words, Limit actions may also be executed.



Active screen saver at Alarm event

If the screen saver is active and an alarm event occurs (incoming alarm, outgoing alarm), the active screen saver is closed.



Protection from operating errors

The entry of additional text or images (separated by commas) causes the screen saver to be deactivated over several stages. In other words, the first touch causes the display of the next text/ image, which in turn must also be confirmed in order to close the screen saver. This can be used to virtually exclude the accidental triggering of functions via touch.

8.3.7 Sys2PLC

The #Sys2PLC object is used to synchronize the values of two variables. These variables must be of the same data type, the only exception being the conversion of String to WString (see <u>Conversion</u>).

Parameters

Object	

Column A, object	M/O	Default	Description
#Sys2PLC	М		Synchronizing variables

Text/File

<u>Column B, Text/</u> <u>File</u>	M/O	Default	Description
<sys2plc.txt></sys2plc.txt>	М		Sys2PLC definition with variable list.

Conversions

Variable1 and Variable2 must be of the same data type in all cases.

The following conversions are supported (in both directions):

Type1	Туре2
WSTRING	STRING



Triggering a screen page change in the PLC

The #Sys2Plc object makes it possible to trigger a screen page change by pairing the EPAM system variable <u>/S/SYS/NewPage</u> with a PLC variable, e.g. PLC/NewPagename. If, for example, the variable PLC/NewPagename in the PLC project is set with the value '#Page=<name>', the value '#Page=<name>' is transferred to the EPAM <u>system variable</u> and a screen page change is executed to page <name>.

8.3.7.1 Sys2PLC definition

The <u>Sys2PLC</u> worksheet contains the variable list for the #Sys2PLC object:

Variable1	Variable1 Type	Variable2	Variable2 Type	Option
/ <drv>/<host>/ <variable1></variable1></host></drv>	< <u>Type</u> >	/ <drv>/<host>/ <variable2></variable2></host></drv>	< <u>Type</u> >	See below

Options	Comment
force=1	Causes variable1 to be always overwritten with the value of variable2
force=2	Causes variable2 to be always overwritten with the value of variable1

Default: When changed, variables are synchronized in both directions. On startup of the *RTS* variable1 is written to variable2.



The *RTS* uses the first line and all subsequent lines beginning with the "/". A break occurs at the first line that does not begin with "/", e.g. an empty line!

Difference to EPAM3

- In EPAM3 variables were refreshed from the PLC cyclically every 0.5s. In EPAM4 this is implemented in the cycle of the communication driver.
- In EPAM3 only system variables could be synchronized with PLC variables. In EPAM4 any variables can be synchronized.

8.4 Controls

Controls contains the group of display and operating objects. These objects are only active on those pages where they were configured as long as the corresponding page is active.

8.4.1 AlarmList

The #AlarmList object enables the content of the alarm buffer of an #Alarm object to be displayed.

The following information (columns) can be displayed: Parameters Description

AlarmNo	Alarm number as configured in the Alarm definition
AlarmOn	Date/time of the occurrence of the alarm (rising edge).
AlarmOff	Date/time of the going of an alarm (falling edge).
AlarmQuit	Date/time, of the acknowledgement.
AlarmText	Alarm text, as configured (language dependent).

If several <u>#Alarm</u> objects were configured, setting the system variable <u>/S/App/Alarm:Type</u> or statically with the option AlarmType=<type>, can determine the <u>#Alarm</u> object from which the alarms are to be displayed. If, however, only a single <u>#Alarm</u> object was configured, this variable can stay empty.

Parameters

Object

Column A	M/O	Default	Description
#AlarmList	М		Display of alarm messages

Text/File

Column B	M/O	Default	Description
<alarmlist< td=""><td>М</td><td></td><td>Name of the AlarmList definition.</td></alarmlist<>	М		Name of the AlarmList definition.
definition>.txt			The AlarmList is defined in a separate worksheet. This
			determines which data is displayed as well as the display
			order and format.



Font

<u>Column C</u>	M/O	Default	Description
	0	<u>Current</u> font	<u>Font</u> for the alarm text, etc. Alarm-specific fonts can be configured in the <u>Alarm</u> <u>definition</u> .

X, Y, DX, DY

<u>Columns D-G</u>	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension
		ng	

Color

<u>Column H</u>	M/O	Default	Description
<u>Color</u>	0	<u>Current</u>	Font color
		foregrou	The font color can be defined for each alarm in the Alarm
		nd color	definition.
M/O Default Description Color O Current backgro und color Background color The background color for each alarm can be defined in the Alarm definition

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No frame	Type of frame, all except Border=Shadow
Border=Standard	0		Standard Qt-Border

Action

<u>Column K</u>	M/O	Default	Description
AlarmList:Info=1	0		When an alarm is selected, the first page defined in <u>AlarmInfo</u> is opened.
AlarmList:Info=2	0		When an alarm is selected, the second page defined in <u>AlarmInfo</u> is opened.

VarValue

<u>Column P</u>	M/O	Default	Description
<variable></variable>	0		Line number of the currently selected alarm. The first line is 0. The selection is changed by changing the variable (e.g. in the PLC).

VarType

<u>Column Q</u>	M/O	Default	Description
WORD UINT INT	0		See <u>VarType</u> column

VarState

<u>Column R</u>	M/O	Default	Description
<variable></variable>	0		See <u>VarState</u> column

Option

<u>Column S</u>	M/O	Default	Description			
DX= <width></width>	0	25	Defines the width of the vertical scroll bar in pixels. 0 = Hide scroll bar			
DY= <height></height>	0	25	Defines the height of the horizontal scroll bar in pixels. 0 = Hide scroll bar			
 AlarmFilter=<filter></filter> AlarmFilter=all AlarmFilter=activ notquit 	0	AlarmFilter =all	 Display all alarms Display all active or unacknowledged alarms Display all active and unacknowledged alarms 			

146 EPAM4-Manual

 AlarmFilter=activ+ notquit AlarmFilter=activ AlarmFilter=notquit 			Display all active alarmsDisplay all unacknowledged alarms
AlarmSort= <sort> AlarmSort=FiFo AlarmSort=LiFo AlarmSort=Priority </sort>	0	AlarmSort= Fifo	 Sort in ascending order by <i>AlarmOn</i> Sort in descending order by <i>AlarmOn</i> Sort in ascending order by AlarmNo
Coff	0		Individual alarms can be selected. The display of the selected alarm is inverted (Color/Backcolor). If this option is set, no other alarm can be selected.
AlarmType= <type></type>	0		Connect to #Alarm object type <type> <u>/S/App/Alarm:Type</u> will be ignored!</type>

The #AlarmList object supports the following display formats. They can be selected/defined using Button actions and/or via fixed format definitions of the Alarm list in the Option column:

Alarm type

• Display by alarm type

Alarm filter

- Display of all alarms
- Only active alarms
- Active and unacknowledged alarms
- Active or unacknowledged alarms
- Unacknowledged alarms

Alarm sorting

- Display by priority (low alarm number = high priority)
- Display by time: Newest alarm first (last in first out)
- Display by time: Oldest alarm first (first in first out)

Alarm diagnostics/alarm system variables

The alarm message selected in the alarm list can be used via the <u>AlarmList:info=1</u> or <u>AlarmList:</u> <u>info=2</u> action to jump to 2 screen pages configured in the <u>Alarm worksheet</u> in the Action Alarm Info column.

It is also possible to configure a <u>text list</u> with the system variable <u>/S/SYS/AlarmList[<name>]</u>. <u>TXTINFO</u> entered in the <u>Text/File column</u>. The screen page with the configured text list can be opened via the alarm message selected in the alarm list using a *#Page=<name>* action. This text list then shows the text file configured in the corresponding Alarm worksheet under Alarm Helptext.

The alarm information of the last selected alarm in conjunction with alarm list is stored in the following system variables in EPAM.

/S/SYS/AlarmList	Alarm number
[<name>].NR</name>	
/S/SYS/AlarmList	Alarm text
[<name>].TEXT</name>	
/S/SYS/AlarmList	Time alarm "Come" (WSTRING)
[<name>].TIN</name>	
/S/SYS/AlarmList	Time alarm "Go" (WSTRING)
[<name>].TOUT</name>	
/S/SYS/AlarmList	Time alarm acknowledged (WSTRING)

[<name>].TQUIT /S/SYS/AlarmList ... Time alarm "Come" (DT) [<name>].TIN DT /S/SYS/AlarmList ... Time alarm "Go" (DT) [<name>].TOUT DT /S/SYS/AlarmList ... Time alarm acknowledged (DT) [<name>].TQUIT_DT /S/SYS/AlarmList ...Alarm info (WSTRING) [<name>].INFO /S/SYS/AlarmList ...Alarm Help text (WSTRING) [<name>].TXTINFO

See also

- AlarmList action
- <u>Alarm action</u>

Difference to EPAM3

- The alarm list is shown as a table. Any font can therefore be used.
- Alarm messages can be shown over several lines in the alarm list.
- The EPAM3 format settings no=%[Width][Type], tin=Format, tout=Format, tquit=Format, sep= keycode are no longer supported.

8.4.1.1 Definition

The table definition determines the format of the alarm list.

The worksheet format settings consist of a standard header for all lists and the object-specific format settings for the individual columns. (#Column)

Тад	M/O	Value	Default	Comment		
#Header:Height	0	Integer	0	Height of the title row in pixels, in which: <0automatic height 0hide >0fixed height in pixels		
#Header:Font	0	<u>Font</u> name		Font for column header		
#Header:Color	0	<u>Color</u>	Black	Text color of column header		
#Header:BackColor	0	Integer	Grey	Background color of column header		
#Row:Lines	0	Integer	0	Sets the height of the row so that the corresponding number of text lines can be shown in the table row. The row height is determined by the font definition of the #Alarmlist object.		
#Row:Height	0	Integer	0	Row height in pixels when set and >0, otherwise automatically determined by the font definition. This parameter overwrites <i>#Row:Lines</i> .		
#Grid:hide	0	yes no	no	Without cell border With cell border		
#Grid:Color	0	<u>Color</u>		Color of cell border		
#Column	М	ID		Column definition, see below		

Each column to be displayed must be defined with the Column tag. The order from top to bottom is determined by the order of columns from left to right.

#Column ID Format Width Alignment Options

Parame	M/O	Value	Default		Comment
ters					
ID	Μ	AlarmNo AlarmOn f AlarmQu it AlarmTe xt			Specifies the column.
Format	0	<u>Format</u>	AlarmNo AlarmOn AlarmOff AlarmQuit AlartmText	%d %[dd-mm HH:MM %[dd-mm HH:MN %[dd-mm HH:MN %s	Format for data output See also <u>#V<i>ariable</i></u>
Width	0	Integer	-1		Column width, in which: (width < 0) => automatic column width (width == 0) => column hidden (width > 0) => fixed column width in pixels If the total of all fixed column widths is wider than the width DX of the object, a horizontal scroll bar is displayed automatically.
Title	0	Text	AlarmNo AlarmOn AlarmOff AlarmQuit AlartmText	AlarmNo AlarmOn AlarmOff AlarmQuit AlarmText	Column header
Alignm ent	0	left center right	left		Horizontal alignment of the text in the cell • left-justified • centered • right-justified
opuons					

Parameters for #Column tag:

If a table definition is not specified, the #AlarmList will use the following default parameters:

Parameters						
#Header:Height	25					
#Header:Font						
#Header:Color						
#Header: BackColor						
#Row:Height	0					
#Row:Lines	0					
#Grid:Hide	no					
Column	ID	Format	Width	Title	Alignment	Options
#Column	AlarmNo	%lu	-1	AlarmNo	Left	
#Column	AlarmO n	%[dd-mm HH:MM: SS]DT	-1	AlarmOn	Left	

148

#Column	AlarmOf f	%[dd-mm HH:MM: SS]DT	-1	AlarmOff	Left	
#Column	AlarmQ uit	%[dd-mm HH:MM: SS]DT	-1	AlarmQuit	Left	
#Column	AlarmTe xt	%s	-1	AlarmText	Left	

Example

AlarmNo	AlarmOn 🗸	AlarmOff	AlarmQuit	AlarmText	
499	27-03 07:50:48		27-03 07:51:09	Beliebiger Alar…	
500	27-03 07:50:48			Beliebiger Alar…	
501	27-03 07:50:48			Beliebiger Alar…	
502	27-03 07:50:48			Beliebiger Alar…	
503	27-03 07:50:48			Beliebiger Alar…	
504	27-03 07:50:48			Beliebiger Alar…	
505	27-03 07:50:48			Beliebiger Alar…	
506	27-03 07:50:48			Beliebiger Alar…	
507	27-03 07:50:48			Beliebiger Alar	
508	27-03 07:50:48			Beliebiger Alar…	•

8.4.2 Bar

The *#Bar* object is used to display <u>VarValue</u> numerical values in the range between <u>Limit1</u> and <u>Limit2</u> in the form of a bargraph.



Parameters

Object			
<u>Column A</u>	M/O	Default	Description

150 EPAM4-Manual

#Bar M Display the numerical value as a bargraph	
--	--

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni ng	Position and dimension

Color

Column H	M/O	Default	Description
<color></color>	0	Current	Fill color
		foregrou	
		nd color	

BackColor

Column I	M/O	Default	Description
<color></color>	0	Current	Background color
		backgro	
		und	
		<u>color</u>	

Format

Column J	M/O	Default	Description
<u>Format</u>	0	No frame	Type of frame

Action

Column K	M/O	Default	Description
SetVar	0		The SetVar actions are supported apart from SetVar=NotVar

Limit1

Column L	M/O	Default	Description
	0	<u>VarType</u>	Initial value of the bargraph. See also Parameter Option!
<constant></constant>		<u>-Min</u>	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

Limit2

Column M	M/O	Default	Description
	0	<u>VarType</u>	End value of the bargraph. See also Parameter Option.
<constant></constant>		<u>-Max</u>	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

ActionLimit1, ActionLimit2

Columns N,O	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

Column P	M/O	Default	Description
<variable></variable>	0		The value of this variable determines how much the bargraph is filled

VarType

Column Q	M/O	Default	Description
Numerical data types	0		All numerical data types are supported

VarState

Column R	M/O	Default	Description
<variable></variable>	0		

Option

Column S	M/O	Default	Description
Fill=Up	0	Fill=Up	Fill from bottom to top, for which Limit1 is bottom and Limit2 top. Example 100
Fill=Down	0		Fill from top to bottom, for which Limit1 is top and Limit2 bottom. Example 0 100
Fill=Right	0		Fill from left to right, for which Limit1 is left and Limit2 right. Example 0 100
Fill=Left	0		Fill from right to left, for which Limit1 is right and Limit2 left.

Column S	M/O	Default	Description
			100 0
Fill=x	0		The object is filled from the center to the left or right. Limit1 is the far left, Limit 2 is the far right, the center is (Limit1 + Limit2)/2 Example -100 0 100
Fill=y	0		The object is filled from the center to the top or bottom. Limit1 is at the bottom, Limit 2 is at the top, the center is (Limit1 + Limit2)/2 Example 100
PWL= <level></level>	0	0	Required password level for enabling (see <u>#Password</u>).
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

Init, Exit

<u>Columns U, V</u>	M/O	Default	Description
<action></action>	0		The same actions are available as described for the Action
			parameter

0

The Limit action (e.g. color change) is executed when limit values are overshot or undershot. A Limit action, such as at 80% of the value is not possible. For this two bar objects such as <u>\$Group</u> object can be defined (see also "overlaid objects" demo project). Alternatively the <u>#VBar</u> object can also be used.

8.4.3 Button

The *#Button* object is used for user inputs. It makes a large number of actions available in order to interact with the system.

• Page change

- Controlling variables
- Character input
- Alarm handling
- Recipe handling
- ...

See also

General actions Alarm actions AlarmList actions Authent actions DataLog actions RemoteControlServer actions Recipe actions Recipe list actions Trend actions General actions

Parameters

Object

02/000			
Column A	M/O	Default	Description
#Button	М		Touch/mouse active area for interaction

Text/File

EPAM4-Manual

154

Column B	M/O	Default	Description	า	
	0		lf no image such as wit <i>transparent</i>	or text is er hin a graphi is used as	tered, this is a touch active field, c. The field is inverted on actuation if Backcolor.
<text1>[,<text2>]</text2></text1>	0		Text to be c	lisplayed (al	so <u>multiple line</u>)
			<u>Variant1: <</u> <text1> is c <u>Variant2: <</u> <text1> is c</text1></text1>	tisplayed for tisplayed for tisplayed in	r states not actuated/actuated xt2> non-actuated state
			< text > 15 t	isplayed in	
			Positioning Text is cent allows horiz	g of text: ered, howev ontal alignm	<i>r</i> er, the option <i>pos</i> = <alignment> also nent.</alignment>
			Examples	;	
			Text/File	State	Result
			Text1, Text2	Not actuated	Text1
			Text1, Text2	Actuated	Text2
<image0>[, <image1>]</image1></image0>			Image file(s non-actuate) to be displ d (<image0< td=""><td>ayed as icon (<image0>) or for the >) and actuated (<image1>) state</image1></image0></td></image0<>	ayed as icon (<image0>) or for the >) and actuated (<image1>) state</image1></image0>
			Positioning	g of images	<u>S.</u>
			If a border is	s defined, th	e display of the images is centered.
			to the top le	is defined, t eft.	ne images are positioned in relation
			Example		
			hand.pcx	Not actuated	Hand

Font

Column C	M/O	Default	Description
	0	<u>Current</u>	Font for <text1> and <text2></text2></text1>
		font	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni ng	Position and dimension.

Color

Column H	M/O	Default	Descriptio	n	
Color1[,Color2]	0	Current foregrou nd color	Text color: Color1 for n Color2 for a Example:	ion-actuated	I
			Color	State	Result
			black,red	Not actuated	Text1
			black,red	Actuated	Text2
			C	•	·

BackColor

<u>Column I</u>	M/O	Default	Description	า	
Color1[.Color2]	0	<u>Current</u> <u>backgro</u> <u>und</u> <u>color</u>	Background Color1 for n Color2 for a Example	l color: on-actuated ctuated	
			Backcolor	State	Example
			grey,red	Not actuated	Text1
			grey,red	Actuated	Text2

Format

Column J	M/O	Default	Description
<u>Format</u>	0	No frame	Type of frame
Invisible	0		Object not visible

Action

Column K	Description
<action></action>	Action is executed on button actuation, irrespective of the variable value
<action1>&<action2></action2></action1>	Multiple actions can be defined with &. Action1 AND Action2, are executed on button actuation, irrespective of the variable value
<action0>,<action1>,</action1></action0>	Action is executed on button actuation, depending on the variable value. Example Action: #Page=Value0,#Page=Value1 Change to screen page "Value0" if the variable value is 0 Change to screen page "Value1" if the variable value is 1

9

The Switch= option enables also value ranges to be defined for the individual actions.

Example

Action #Page=Range0, #Page=Range1, #Page=Range3 Option Switch=<0:0..5:>5

Change to screen page "Range0" if the variable value is < 0 Change to screen page "Range1" if the variable value is in the range 0 to 5 Change to screen page "Range2" if the variable value is > 5

Action (general actions)

Column K	Description	
#Page= <name></name>	Open page with name <name></name>	
#Page= <name>:animation={topin¦bottomin¦ leftin¦rightin}[(<duration>)]</duration></name>	Animated page change: To open a page with an animation append <i>:animation=</i> to the page name, followed by type of animation:	
	animation=topin animation=bottomin animation=leftin animation=rightin	shift the page into the display f shift the page from into the disp shift the page from left into the shift the page from right into the
	Sample: #Page=pw:animation=t	opin
	Optionally it's possible to animation. Default ist 60	o define the duration of the 0ms.
	Sample: #Page=pw:animation=t	opin(400)
PageHome	Open start page	
PageBack	Open the last Page (sim functionality Back)	ilar to web-browser
Close	Close the highest or last	t opened page (window)
Close= <name></name>	Close the page (window)) with the name <name></name>
EjectVolume(Drive;#page= <eject_failed>; #page=<eject_succeeded>)</eject_succeeded></eject_failed>	Dismounts a store Wecl oder SD-card.	hselspeicher, e.g. memorystick
	<i>#page=<eject failed=""> :</eject></i> F (optional)	Page to open in case of an error
	<pre>#page=<eject (="" impl<="" optional,="" pre="" succeede="" success=""></eject></pre>	<pre>d> : Page to open in case of ies #page=<eject failed)<="" pre=""></eject></pre>
	Sample:	
	EjectVolume(/Storag	eCard2)
	EjectVolume(/Storag	eCard2; #page=eject_failed
Evit	EjectVolume(/Storag	eCard2; #page=eject failed
<i>FileCopy(src</i> = <filepath1> <i>dst</i>=<filepath2> [#page=<error> [#page=<ok>]])</ok></error></filepath2></filepath1>	Copy file <filepath1> to</filepath1>	<filepath2></filepath2>
	Optional:	is apared on early error
	2. Page #page= <ok>: is</ok>	opened after the copy

	operation was successfully completed
	<pre>Examples filecopy(src=\Epam4\log\f1.log dst=\StorageCa filecopy(src=\Epam4\log\f1.log dst=\StorageCa filecopy(src=\Epam4\log\f1.log dst=\StorageCa</pre>
IPparam:Get	Loads the IP parameters (EthernetAdapter 0) in the system variables: • <u>/S/SYS/Ethernet[0].MacAdr</u> • <u>/S/SYS/Ethernet[0].IpAdr</u> • <u>/S/SYS/Ethernet[0].GatewayIpAdr</u> • <u>/S/SYS/Ethernet[0].Dns1IpAdr</u> • <u>/S/SYS/Ethernet[0].Dns2IpAdr</u> • <u>/S/SYS/Ethernet[0].DhcpMode</u> • <u>/S/SYS/Ethernet[1].MacAdr</u> • <u>/S/SYS/Ethernet[1].IpAdr</u> • <u>/S/SYS/Ethernet[1].GatewayIpAdr</u> • <u>/S/SYS/Ethernet[1].SubnetMask</u> • <u>/S/SYS/Ethernet[1].Dns1IpAdr</u> • <u>/S/SYS/Ethernet[1].Dns1IpAdr</u> • <u>/S/SYS/Ethernet[1].Dns2IpAdr</u> • <u>/S/SYS/Ethernet[1].Dns2IpAdr</u>
IPparam:Set	Sets the IP parameters (EthernetAdapter 0) according to the system variables /S/SYS/Ethernet[0].MacAdr /S/SYS/Ethernet[0].IpAdr /S/SYS/Ethernet[0].GatewayIpAdr /S/SYS/Ethernet[0].SubnetMask /S/SYS/Ethernet[0].Dns1IpAdr /S/SYS/Ethernet[0].Dns2IpAdr /S/SYS/Ethernet[0].DhcpMode /S/SYS/Ethernet[1].MacAdr /S/SYS/Ethernet[1].MacAdr /S/SYS/Ethernet[1].DhcpMode /S/SYS/Ethernet[1].DhcpMode /S/SYS/Ethernet[1].DhcpMode /S/SYS/Ethernet[1].DhcpMode /S/SYS/Ethernet[1].DhcpMode /S/SYS/Ethernet[1].DhcpMode /S/SYS/Ethernet[1].DhcpMode /S/SYS/Ethernet[1].DhcpMode
<i>Key</i> = <keycode></keycode>	Sends the character <keycode> received from a #Variable object in Input mode (focus). Is required for creating keyboard pages. Characters can be defined as follows: Exam Ascii/Unicode characters key=k Hexcode key=l Key name key=l See also Key name</keycode>
Language= <name> Language=default</name>	Language change to <name> or default language (<i>Language=default)</i> Change to language <name>. Set /S/APP/Language to <name></name></name></name>

PlcCmd=/ <drv>/<host>:CreateBootProject Send command to PLC on channel /<drv>/<host>: Create boot project PlcCmd=/<drv>/<host>:ResetCold Send command to PLC on channel /<drv>/<host>: Cold reset PlcCmd=/<drv>/<host>:ResetOriginal Send command to PLC on channel /<drv>/<host>: Reset original PlcCmd=/<drv>/<host>:ResetWarm Send command to PLC on channel /<drv>/<host>: Reset original PlcCmd=/<drv>/<host>:ResetWarm Send command to PLC on channel /<drv>/<host>: Warm reset PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Warm reset PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Stop PWL=<level> Sets the <i>#Password</i> level to <level> VL=<level> Sets the system SetDateTime Sets the system fime (and date), in which the time s is formed from the following system variables: /S/SYS/tm_Mon /S/SYS/tm_Mon /S/SYS/tm_Day /S/SYS/tm_Day /S/SYS/tm_Day /S/SYS/tm_Day /S/SYS/tm_IsPm /S/APPt/m_UseAmPm On Windows Vista and above the user needs appropriate privileges (SE_SYSTEMTIME_NAME) to change the system time. See: Assigning Privileges to an Account System=<excutable> [options] Any executable file including parameters can be an</excutable></level></level></level></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv>		
PIcCmd=/ <drv>/<host>: CreateBootProject Send command to PLC on channel /<drv>/<host>: Create boot project Send command to PLC on channel /<drv>/<host>: PIcCmd=/<drv>/<host>:ResetOriginal Send command to PLC on channel /<drv>/<host>: PIcCmd=/<drv>/<host>:ResetOriginal Send command to PLC on channel /<drv>/<host>: PIcCmd=/<drv>/<host>:ResetWarm Send command to PLC on channel /<drv>/<host>: Warm reset PIcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: PIcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start PIcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start PIcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start PWL=<level> Sets the t#Password level to <level> ``` ``` Sets the system time (and date), in which the time s is formed from the following system variables: `S/SYS/tm_Hour SSYSY:tm_Hour 'S/SYS/tm_Hour 'S/SYS/tm_Min 'S/SYS/tm_Hour 'S/SYS/tm_Hour 'S/SYS/tm_Min 'S/SYS/tm_Hour 'S/SYS/tm_Hour 'S/SYS/tm_Min 'S/SYS/tm_Hour 'S/SYS/tm_Hour 'S/SYS/tm_Min 'S/SYS/tm_Hour 'S/SYS/tm_Hour 'S/SYS/tm_H</level></level></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv>		varpool:sysvarsave is executed implicitly
PIcCmd=/ <drv>/<host>:ResetCold Send command to PLC on channel /<drv>/<host>: Cold reset Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:ResetOriginal Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:ResetWarm Send command to PLC on channel /<drv>/<host>: Warm reset Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Stop Sets the #Password level to <level> VL=<level> Sets the #Password level to <level> SetDateTime Sets the system time (and date), in which the time s is formed from the following system variables: /S/SYS/tm_Man /S/SYS/tm_Man /S/SYS/tm_Nap /S/SYS/tm_Ispm /S/SYS</level></level></level></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv>	PIcCmd=/ <drv>/<host>:CreateBootProject</host></drv>	Send command to PLC on channel / <drv>/<host>: Create boot project</host></drv>
PlcCmd=/ <drv>/<host>:ResetOriginal Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:ResetWarm Send command to PLC on channel /<drv>/<host>: Warm reset Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Stop Send command to PLC on channel /<drv>/<host>: PwL=<level> Sets the #Password level to <level> V </level></level></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv>	PlcCmd=/ <drv>/<host>:ResetCold</host></drv>	Send command to PLC on channel / <drv>/<host>: Cold reset</host></drv>
PlcCmd=/ <drv>/<host>:ResetWarm Send command to PLC on channel /<drv>/<host>: Warm reset Send command to PLC on channel /<drv>/<host>: Start Send command to PLC on channel /<drv>/<host>: PlcCmd=/<drv>/<host>:Start Send command to PLC on channel /<drv>/<host>: Start Send command to PLC on channel /<drv>/<host>: PWL= Sets the gassword level to <level> VL=<level> Sets the #Password level to <level> SetDateTime Sets the system SetDateTime Sets the system time (and date), in which the time s is formed from the following system variables: /S/SYS/tm_Hour /S/SYS/tm_Min /S/SYS/tm_Min /S/SYS/tm_Min /S/SYS/tm_Day /S/SYS/tm_Sea /S/SYS/tm_Day /S/SYS/tm_IsPm /S/APP/tm_UseAmPm On Windows Vista and above the user needs appropriate privileges (SE_SYSTEMTIME_NAME) to change the system time. Seee: Assigning Privileges to an Account Any executable file including parameters can be an</level></level></level></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv></host></drv>	PlcCmd=/ <drv>/<host>:ResetOriginal</host></drv>	Send command to PLC on channel / <drv>/<host>: Reset original</host></drv>
PlcCmd=/ <drv>/<host>:Start Send command to PLC on channel /<drv>/<host>:Start PlcCmd=/<drv>/<host>:Stop Send command to PLC on channel /<drv>/<host>:Stop PWL=<level> Sets the #Password level to <level> @ /S/SYS/Pwl can also be set directly Reboot Restart the system SetDateTime Sets the system time (and date), in which the time s is formed from the following system variables: /S/SYS/tm_Hour /S/SYS/tm_Min /S/SYS/tm_Name /S/SYS/tm_Man /S/SYS/tm_Day /S/SYS/tm_Day /S/APP/tm_UseAmPm On Windows Vista and above the user needs appropriate privileges (SE_SYSTEMTIME_NAME) to change the system time. See: Assigning Privileges to an Account Any executable file including parameters can be an</level></level></host></drv></host></drv></host></drv></host></drv>	<i>PlcCmd=/</i> <drv>/<host>:<i>ResetWarm</i></host></drv>	Send command to PLC on channel / <drv>/<host>: Warm reset</host></drv>
PlcCmd=/ <drv>/<host>:Stop Send command to PLC on channel /<drv>/<host>:Stop PWL=<level> Sets the <u>#Password</u> level to <level> @ /S/SYS/PW can also be set directly Reboot Restart the system SetDateTime Sets the system time (and date), in which the time s is formed from the following system variables: /S/SYS/tm_Hour /S/SYS/tm_Hour /S/SYS/tm_Min /S/SYS/tm_Nin /S/SYS/tm_Non /S/SYS/tm_Non /S/SYS/tm_IsPm /S/SYS/tm_IsPm /S/APP/tm_UseAmPm @ On Windows Vista and above the user needs appropriate privileges (SE_SYSTEMTIME_NAME) to change the system time. See: Assigning Privileges to an Account System=<excutable> [options] Any executable file including parameters can be an</excutable></level></level></host></drv></host></drv>	<i>PlcCmd=/</i> <drv>/<host>:<i>Start</i></host></drv>	Send command to PLC on channel / <drv>/<host>: Start</host></drv>
PWL= <level> Sets the <u>#Password</u> level to <level> @ /S/SYS/Pw can also be set directly Reboot Restart the system SetDateTime Sets the system time (and date), in which the time s is formed from the following system variables: /S/SYS/tm Hour /S/SYS/tm Mon /S/SYS/tm Non /S/SYS/tm Non /S/SYS/tm Day /S/SYS/tm IsPm /S/APP/tm UseAmPm On Windows Vista and above the user needs appropriate privileges (SE_SYSTEMTIME_NAME) to change the system time. See: Assigning Privileges to an Account System=<excutable> [options] Any executable file including parameters can be an</excutable></level></level>	PlcCmd=/ <drv>/<host>:Stop</host></drv>	Send command to PLC on channel / <drv>/<host>: Stop</host></drv>
Image: System = <excutable> [options] Image: System =<excutable> [options]</excutable></excutable>	PWL= <level></level>	Sets the <u>#Password</u> level to <level></level>
SetDateTime Sets the system time (and date), in which the time s is formed from the following system variables: /S/SYS/tm_Hour /S/SYS/tm_Hour /S/SYS/tm_Min /S/SYS/tm_Neec /S/SYS/tm_Neer /S/SYS/tm_Neer /S/SYS/tm_Mon /S/SYS/tm_Day /S/SYS/tm_IsPm /S/APP/tm_UseAmPm /S/APP/tm_UseAmPm Image: the system time. Seee: Assigning Privileges (SE_SYSTEMTIME_NAME) to change the system time. Seee: Assigning Privileges to an Account System= <excutable> [options] Any executable file including parameters can be an</excutable>	Detect	V <u>/S/SYS/Pw</u> can also be set directly
SetDateTime Sets the system time (and date), in which the time s is formed from the following system variables: /S/SYS/tm_Hour /S/SYS/tm_Hour /S/SYS/tm_Min /S/SYS/tm_Neec /S/SYS/tm_Neer /S/SYS/tm_Neer /S/SYS/tm_Day /S/SYS/tm_Day /S/SYS/tm_IsPm /S/APP/tm_UseAmPm /S/APP/tm_UseAmPm /S/APP/tm_UseAmPm /System= <excutable> [options] On Windows Vista and above the user needs appropriate privileges (SE_SYSTEMTIME_NAME) to change the system time. Seee: Assigning Privileges to an Account Any executable file including parameters can be an</excutable>	Repoot	Restart the system
Image: System= <excutable> [options] On Windows Vista and above the user needs appropriate privileges (SE_SYSTEMTIME_NAME) to change the system time. Seee: Assigning Privileges to an Account System=<excutable> [options] Any executable file including parameters can be an</excutable></excutable>	SetDateTime	Sets the system time (and date), in which the time set is formed from the following system variables: / <u>S/SYS/tm_Hour</u> / <u>S/SYS/tm_Min</u> / <u>S/SYS/tm_NSec</u> / <u>S/SYS/tm_Year</u> / <u>S/SYS/tm_Day</u> / <u>S/SYS/tm_ISPm</u> / <u>S/APP/tm_UseAmPm</u>
<i>System</i> = <excutable> [options] Any executable file including parameters can be an</excutable>		On Windows Vista and above the user needs appropriate privileges (SE_SYSTEMTIME_NAME) to change the system time. Seee: <u>Assigning Privileges to an Account</u>
<pre><executable>. Paths with blanks must be set between double quotation marks. The following options can be stated between square brackets: -d <working directory=""></working></executable></pre>	System= <excutable> [options]</excutable>	Any executable file including parameters can be an <executable>. Paths with blanks must be set between double quotation marks. The following options can be stated between square brackets: -d <working directory=""></working></executable>
Example system="c:\Program files\viewer\viewer.exe" Executing a batch file under WinCE system=/windows/cmd.exe /c /storagecard/my.)		<pre>Example system="c:\Program files\viewer\viewer.exe" my Executing a batch file under WinCE system=/windows/cmd.exe /c /storagecard/my.bat</pre>
Touch_calibrate Calibration of the resistive touch is called Depends on the device. touch type and manufacturer	Touch_calibrate	Calibration of the resistive touch is called Depends on the device, touch type and manufacturer
TipVar= <value> VarValue value> is set as long as the #Button is pressed, VarValue is then set to 0.</value>	<i>TipVar</i> = <value></value>	<u>VarValue</u> <value> is set as long as the <i>#Button</i> is pressed, <u>VarValue</u> is then set to 0.</value>
Unit= <index> Unit system conversion, for which <index> must be a</index></index>	Unit= <index></index>	Unit system conversion, for which <index> must be an</index>

	integer >= 0. (see <u>Unit systems</u>)
Varpool:[<driver>][<host>].export</host></driver>	Saves the variables of the host to: < <i>PATH_DAT>/</i> <drv>-<host>.csv.</host></drv>
Varpool:sysvarsave	Saves the persistent <u>system variables</u> in <i><path_ini>/</path_ini></i> <host>.INI.</host>

Action (PlcCmd actions)

Via PlcCmd Aktionen können die Betriebszustände der SPS gesteuert werden.

Column K	Beschreibung
PlcCmd=/ <drv>/<host>: CreateBootProject</host></drv>	Send command to PLC on channel / <drv>/<host>: Create boot project</host></drv>
PlcCmd=/ <drv>/<host>: ResetCold</host></drv>	Send command to PLC on channel / <drv>/<host>: Cold reset</host></drv>
PlcCmd=/ <drv>/<host>: ResetOriginal</host></drv>	Send command to PLC on channel / <drv>/<host>: Reset original</host></drv>
PlcCmd=/ <drv>/<host>: ResetWarm</host></drv>	Send command to PLC on channel / <drv>/<host>: Warm reset</host></drv>
PlcCmd=/ <drv>/<host>: Start</host></drv>	Send command to PLC on channel / <drv>/<host>: Start</host></drv>
PlcCmd=/ <drv>/<host>: Stop</host></drv>	Send command to PLC on channel / <drv>/<host>: Stop</host></drv>

	-	
- 4	~	~
- 0	۱.	-0
- 1		77
		2

Vot all commands are supported by all communication drivers, see table below:

Command / Driver	PIcH Arti	PIcH Gateway3	RS7	ADS	OPC
CreateBootProject			\checkmark		
ResetCold			\checkmark		
ResetOriginal			\checkmark		
ResetWarm			\checkmark		
Start	\checkmark		\checkmark	\checkmark	
Stop	\checkmark		\checkmark	\checkmark	

Action (Setvar actions)		
Column K	Description	
SetVar= <constant></constant>	The constant <constant> is assigned to the VarValue.</constant>	
<i>SetVar</i> = <variable></variable>	The value of <variable> is assigned to the <u>VarValue</u>.</variable>	
	VarValue, i.e. VarType!	
SetVar=NotVar	Invert variable value (0/1)	
SetVar: <variable1>=<constant> SetVar:<variable1>=<variable2></variable2></variable1></constant></variable1>	The constant <constant> is assigned to <variable1>. The <variable2> is assigned to <variable1>.</variable1></variable2></variable1></constant>	
	variable1> and <variable2> must be of the same data type!</variable2>	
<i>SetVar</i> + <constant></constant>	The <u>VarValue</u> is incremented by the constant	

<i>SetVar</i> + <variable></variable>	<constant>. The <u>VarValue</u> is incremented by the value of <variable>. variable> must be of the same data type as <u>VarValue</u>, i.e. <u>VarType</u>!</variable></constant>
<i>SetVar</i> <constant> <i>SetVar</i><variable></variable></constant>	The <u>VarValue</u> is decremented by the value of constant <constant>. The <u>VarValue</u> is decremented by the value of <variable> <variable> must be of the same data type as <u>VarValue</u>, i.e. <u>VarType</u>!</variable></variable></constant>

Action (actions for <u>#Alarm</u>)

0.1	Description of the second s
<u>Column K</u>	Description
Alarm:delete	Deletes the alarm buffer of the <u>#Alarm</u> object of type <u>/S/APP/Alarm:Type</u>
<i>Alarm:[</i> <type>]. delete</type>	Deletes the alarm buffer of the <u>#Alarm</u> object of type <type></type>
	Example:Alarm:[MyAlarm1].delete
Alarm:export={csv¦ xml}	Exports the alarm buffer of the <u>#Alarm</u> object of type <u>/S/APP/Alarm:Type</u> as csv or xml to PATH_DAT
	All alarms are exported in the order in which they are located in the buffer.
Alarm:[<type>]. export={csv¦xml}</type>	Exports the alarm buffer of the <u>#Alarm</u> object of type <type> as csv and xml to PATH_DAT</type>
	All alarms are exported in the order in which they are located in the buffer.
	Example:alarm:[MyAlarm1].export=xml
Alarm:quitall	Acknowledges all unacknowledged alarms of the <u>#Alarm</u> object of type <u>/S/</u> <u>APP/Alarm:Type</u>
Alarm:[<type>]. quitall</type>	Acknowledges all unacknowledged alarms of the <u>#Alarm</u> object of type <type></type>
	Example: Alarm:[MyAlarm1].quitall
<i>Alarm:type</i> = <type></type>	Specifies the alarm type, required as soon as several <u>#Alarm</u> objects were configured.
	Sets <u>/S/APP/Alarm:Type</u> to <type>.</type>

<u>/S/APP/Alarm:Type</u> only has to be set if several <u>#Alarm</u>objects were configured

Column K	Description
AlarmList:quit	acknowledges the selected alarm
AlarmList: sort=FiFo	Sort in descending order by <i>AlarmOn</i> (oldest alarm at top) Set sorting: FiFo = oldest alarm first, i.e. in ascending order by <i>AlarmOn</i> LiFo = newest alarm first, i.e. in descending order by <i>AlarmOn</i> Priority = ascending by <i>AlarmNo</i>
AlarmList:sort=LiFo	Sort in descending order by <i>AlarmOn</i> (newest alarm at top)
AlarmList: sort=Priority	Sort in ascending order by <i>AlarmNo</i> (lowest alarm number at top)
AlarmList:filter=all	Display all alarms
AlarmList: filter=activ	Only display active alarms

Action (actions for <u>#AlarmList</u>)

AlarmList: filter=activ notquit	Display only active or unacknowledged alarms			
AlarmList: filter=activ+notquit	Display active and unacknowledged alarms			
AlarmList: filter=notquit	Display only unacknowledged alarms			
AlarmList:info= <n></n>	The page <n> configured in the <u>Alarm definition</u> at Alarm Info action of the selected alarm is opened. (1. Action=1, 2.=2,)</n>			
AlarmList: [<name>].<action></action></name>	Execute <action> on the #AlarmList designated by <name>. <action> can one of the actions listed above. (e.g. quit, sort,). Thereby it isn't necessary set /S/APP/AlarmList:Type.</action></name></action>			

Actions are executed in response to the first active <u>#AlarmList</u> object or, if <u>/S/APP/AlarmList</u>: <u>Type</u> is set, in response to the <u>#AlarmList</u> object of the designated type.

Action (actions for <u>#Authent</u>)

Column K	Description Log in user with /S/SYS/Authent:User and /S/SYS/Authent:Pwd				
Authent:login					
Authent:logout	Log out the logged in user				
Authent: changePwd	Change the password of the logged in user to /S/SYS/Authent:Pwd.				
Authent:addUser	Create user S/SYS/Authent:User (not assigned to a role)				
<i>Authent: addUserToRole=</i> <role></role>	Create user S/SYS/Authent:User and assign to the role <role>.</role>				

Action (actions for <u>#Datalog</u>)

<u>Column K</u>	Description				
<i>Datalog:[</i> <name>]. save</name>	Copies the log file of the <u>#Datalog</u> object of type <name> to PATH_DAT</name>				
<i>Datalog:[</i> <name>]. <i>delete</i></name>	Deletes the log file of the <u>#Datalog</u> object of type <name></name>				
<i>Datalog:</i> [<name>]. export</name>	Exports the log file of the <u>#Datalog</u> object of type <name> to PATH_DAT The target filename may be specified with the <u>#Export</u> parameter in the Datlog- Definition table.</name>				
<i>Datalog:[</i> <name><i>].</i> <i>export</i>=<path></path></name>	Exports the log file of the <u>#Datalog</u> object of type <name> to path The target filename may be specified with the <u>#Export</u> parameter in the Datlog- Definition table. The path maybe, fully or partially, specified with a variable. eg: Datalog:[dl1].export=/storagecard2/%/S/TMP/myDir%</name>				
<i>Datalog:exportall=</i> <path></path>	Exports the log files of all <u>#Datalog</u> objects to <path> with extension ".csv". The path maybe, fully or partially, specified with a variable. eg: Datalog:[dll].export=/storagecard2/%/S/TMP/myDir%</path>				

Column K	Description		
RemoteControl: connection.drop	The connections to all clients connected to the local remote server are dropped		
RemoteControl: input.enable	Enables remote control with keyboard or mouse		
RemoteControl: input.disable	Disables remote control with keyboard or mouse		

Action (actions for controlling the <u>#RemoteControl</u> server)

Action (actions for <u>#Recipe</u>)

Column K	Description				
<i>Recipe:</i> type= <type></type>	Sets /S/APP/Recipe:Type to <type></type>				
Recipe:delete	Delete recipe file <u>/S/APP/Recipe[<type>].file</type></u> of type <u>/S/APP/Recipe:Type</u>				
Recipe:[<type>]. delete</type>	Delete recipe file <u>/S/APP/Recipe[<type>].file</type></u> of type <type></type>				
Recipe:load	Load recipe file <u>/S/APP/Recipe[<type>].file</type></u> of type <u>/S/APP/Recipe:Type</u>				
<i>Recipe:load=</i> <filepath></filepath>	Recipe of type <u>/S/APP/Recipe:Type</u> loads file <filepath></filepath>				
Recipe:[<type>]. load</type>	_oad recipe file <u>/S/APP/Recipe[<type>].file</type></u> of type <type></type>				
<i>Recipe:[</i> <type>]. <i>load</i>=<filepath></filepath></type>	Recipe of type <type> loads file <filepath></filepath></type>				
Recipe:csave	Save recipe of type /S/APP/Recipe:Type. Recipe and file name are taken from the system variables <u>/S/APP/Recipe</u> <u>[<type>].name</type></u> <u>/S/APP/Recipe[<type>].file</type></u> . If the file already exists, the file is not overwritten but a runtime error is displayed, or if configured at the <u>#Recipe</u> object, the <u>action</u> #Page= <name> is executed.</name>				
<i>Recipe:[</i> <type>]. <i>csave</i></type>	Save recipe of type <type>. Recipe and file name are taken from the system variables <u>/S/APP/Recipe</u> <u>[<type>].name</type></u> <u>/S/APP/Recipe[<type>].file</type></u>. If the file already exists, the file is not overwritten but a runtime error is displayed, or if configured at the <u>#Recipe</u> object, the <u>action</u> #Page=<name> is executed.</name></type>				
Recipe:save	Save recipe of type /S/APP/Recipe:Type. Recipe and file name are taken from the system variables /S/APP/Recipe[<type>].name /S/APP/Recipe[<type>].file .</type></type>				
Recipe:[<type>]. save</type>	Save recipe of type <type>. Recipe and file name are taken from the system variables <u>/S/APP/Recipe[<type>].name</type></u> <u>/S/APP/Recipe[<type>].file</type></u>.</type>				

Action (actions for <u>#RecipeList</u>)

<u>Column K</u>	Description			
RecipeList:delete	Delete the selected recipe in the <u>#RecipeList</u>			
RecipeList:load	Load the selected recipe in the <u>#RecipeList</u>			
RecipeList:csave	Save the selected recipe in the <u>#RecipeList</u> .			

	If the file already exists, the file is not overwritten but a runtime error is displayed, or, if configured at the <u>#Recipe</u> object, the <u>action</u> #Page= <name> is executed.</name>
RecipeList:save	Save the selected recipe in the <u>#RecipeList</u> .
	💆 The file will be overwritten if it already exists.
RecipeList:sort=file	Sort the <u>#RecipeList</u> in ascending order by <i>file column</i>
RecipeList: sort=name	Sort the <u>#RecipeList</u> in ascending order by <i>name column</i>
RecipeList: sort=time	Sort the <u>#RecipeList</u> in ascending order by <i>time column</i>

Action (actions for <u>#Trend</u>)

Column K	Description
Trend:online	The #Trend is switched online (after cursor, or scrolling).
Trend:[<name>].</name>	
online	
Trend:ShiftCursor	The <u>#Trend</u> cursor is shifted by the number <offset> of data points.</offset>
<offset></offset>	A positive <+offset> shifts in the direction of the future
	A negative <-offset> shifts in the direction of the past
<i>Trend:[</i> <name><i>].</i> <i>ShiftCursor</i><offset></offset></name>	
Trend:ScrollGrid <offset></offset>	The <u>#Trend</u> curves are shifted by <offset> * grid in the current resolution (700m)</offset>
	A positive <+offset> shifts in the direction of the future
	A negative <-offset> shifts in the direction of the past
<i>Trend:[</i> <name>]. ScrollGrid<offset></offset></name>	
Trend:ScrollPage <offset></offset>	The <u>#Trend</u> curves are shifted by <offset> * Page of the current resolution</offset>
	A positive <+offset> shifts in the direction of the future
	A negative <-offset> shifts in the direction of the past
<i>Trend:[</i> <name><i>].</i> <i>ScrollPage</i><offset></offset></name>	
Trend:ScrollEnd	The #Trend curves are shifted to the end, the oldest data is visible
Trend:[<name>]. ScrollEnd</name>	
<i>Trend:ZoomXGrid</i> <factor></factor>	The X axis or the <i>XRange</i> is zoomed:
	XRange = XRange + <factor> * Grid</factor>
	<factor> must be a positive or negative integer constant</factor>
<i>Trend:[</i> <name>]. ZoomXGri<u>d</u><factor></factor></name>	
Trend:ZoomXPage+1	The X axis or the XRange is zoomed:
Trena:2001117 raye-1	trand-7aamVDage±1 -> YRange = YRange * 2
	trend:ZoomXPage-1 => XRange = XRange / 2
<i>Trend:</i> [<name>].</name>	
ZoomXPage+1	
Trend:[<name>].</name>	
ZoomxPage-1	1

Trend:ZoomXReset	The XRange is then reset to the original or configured value			
Trend:[<name>].</name>				
ZoomXReset				

Action (actions for <u>#UserList</u>)

Column K	Description			
UserList:disable	The selected user account becomes inactive			
UserList:enable	The selected user account becomes active			
UserList:remove	The selected user account is deleted			
UserList:resetpwd	The password of the selected user account is reset Depending on the setting in the <u>Authent definition</u> to: • Blank password • default password			

Limit1

<u>Column L</u>	M/O	Default	Description
<constant></constant>	0	VarType	Numerical constant
<variable></variable>		<u>-Min</u>	Variable of type VarType

Limit2

<u>Column M</u>	M/O	Default	Description
<constant></constant>	0	VarType	Numerical constant
<variable></variable>		-Max	Variable of type <u>VarType</u>

ActionLimit1, ActionLimit2

Column N,O	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

<u>Column P</u>	M/O	Default	Description
<variable></variable>	0		Variable to set and or to display

VarType

<u>Column Q</u>	M/O	Default	Description
Data type	0		All data types are supported

VarState

<u>Column R</u>	M/O	Default	Description
<variable></variable>	0		

Option

<u>Column S</u>	M/O	Default	Description
NoBeep	0	Веер	Disable touch beep. Is normally used with stacked (overlaid) buttons.
Pos={Center¦Left¦	0	Pos=Ce	Horizontal alignment of text or image

D '- 1- 12					
Right}		nter			
			Pos=Cel	nter cer	itered
			 Pos=Let 	t left	aligned
			• Pos =Ri	<i>ght</i> righ	t aligned
			The vertical	alignmer	t is centered per default.
VPos={Top¦Bottom}	0		Vertical alio	gnment of	text or image
				on .	ton aligned
				op	top aligned
			• VP0S=B	οιιοπ	bottom aligned
Switch= <range0>:</range0>	0		The Switch	option all	ows to enumerate value ranges.
<range1>:</range1>					
			rangeu	-> 0 -> 1	
				-* 1	
			lf VarValue	is matchi	ng the first range it is taken as 0, if
			VarValue is	s matching	g the second range it is taken as 1,
			The ranges	are sepa	rated by a colon.
			Ranges ca	n be defin	ed as follows:
			<n all<="" td=""><td>values les</td><td>s than <n></n></td></n>	values les	s than <n></n>
			>n All	values are	eater than <n></n>
			in All	values or	eater or equal than <i> and less or equal th</i>
			n Ex	actly <n></n>	
			Sample .:		
			Switch=<1	:1:25:	>5
			Range	Index	Description
			<1	0	all less than 1
			1	1	1
			25	2	from 2 to 5
			> 5	3	greater 5
					<u> </u>
Transparency=<	0		The < <u>color</u>	> specifie	d in an image file is interpreted as
<u>color</u> >			transparent		
			· 🐨		d fen im and fammate that de national and
			IS ON		c for image formats that do not support
			In FPAM4	it is bette	to use the PNG image format instead of
			this option.		
Timeout= <sec></sec>	0	inactive	After a dela	ay of <sec< td=""><td>> seconds, the action is executed every</td></sec<>	> seconds, the action is executed every
			<sec>. Exc</sec>	ception: <i>ti</i>	meout=0 triggers immediately but only
			once.		
PWL= <level></level>	0	0	Required p	assword le	evel for enabling (see <u>#Password</u>).
varStateOnOffInver	0		inverts the	Un / Off fi	inctionality of the <u>VarState</u> Variable:

ted		<i>VarState</i> = 0 -> Off <i>VarState</i> = 1 -> On
ActionOnVarValueU pdate	0	Executing Action in initialisation and any update of VarValue

Init, Exit

Columns U, V	M/O	Default	Description
<action></action>	0		The same actions are available as described for the Action
			parameter



Screen keypad

The action *Key*=<keycode> is used to create screen keyboards. If the mouse or touch activated field is actuated, the corresponding key code is generated so that the keyboard is simulated. See also keyboard table with <u>key designations</u>

Example: *Key*=a ...simulates the key a



Multilingual applications

The *Language*=name or Language=Default action enables online language selection for any language. Other languages are stored in appropriate subdirectories. <name> designates the relevant subdirectory.

To create a multilingual application, define a new language with <u>Add Language</u>. A directory with the entered name is created, and two new columns for Text/File and Font are added at the end to all language-dependent worksheets.



Important!

The name in the first line of these columns corresponds to the directory name and is stored as a comment "Language" (designation of the language columns!). These designations must not be removed!

You can now define all language-dependent definitions in the appropriate language columns (the language-independent definitions can be left empty, these are then configured automatically from the default language). You can also define other fonts if required.

All language-dependent files (*.TXT, *.FNT, *.<u>IMG</u>) must be saved in the appropriate subdirectory. The next time that the<u>Simulation</u> is called in order to launch the interpreter, all language files will be created automatically.

Difference to EPAM3

- Touch-active fields such as on an image, must be defined in EPAM4 with a transparent background color.
- The following actions are currently not supported: See also Actions
- Option Scroll no longer required, see also <u>#Scrollist</u>
- Option *Key*=<keycode> currently not supported

8.4.4 Calendar

The #Calendar object provides a monthly based calendar allowing the user to select a date.

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
22	28	29	30	31	1	2	3
23	4	5	6	7	8	9	10
24	11	12	13	14	15	16	17
25	18	19	20	21	22	23	24
26	25	26	27	28	29	30	1
27	2	3	4	5	6	7	8

Parameters

Object

<u>Column A</u>	M/O	Default	Description
#Calendar	М		Display of different states

Text/File

Column B	M/O	Default	Description

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current font	Font for displaying text

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni ng	Position and dimension

Color

Column H	M/O	Default	Description
Color0,Color1,	0	<u>Current</u> foregrou	Font color of the text for states 0,1,
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
Color0, Color1,	0	Current	Background color of the text for states 0,1,
		backgro	
		<u>und</u>	
		<u>color</u>	

Format

<u>Column J</u>	M/O	Default	Description

Format	0	
	÷	

Limit1

<u>Column L</u>	M/O	Default	Description
	0	<u>VarType</u>	Lower limit value
<constant></constant>		<u>-Min</u>	Numerical constant
<variable></variable>			 Variable of type <u>VarType</u>

Limit2

Column M	M/O	Default	Description
	0	VarType	Upper limit value
<constant></constant>		-Max	Numerical constant
<variable></variable>			 Variable of type <u>VarType</u>

ActionLimit1, ActionLimit2

Columns N,O	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

Column P	M/O	Default	Description
<variable></variable>	0		

VarType

Column Q	M/O	Default	Description
DT	М		
DATE			

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See <u>VarState column</u>

Option

Column S	M/O	Default	Description
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: • VarState = 0 -> Off • VarState = 1 -> On

Init, Exit

<u>Columns U, V</u>	M/O	Default	Description
SetVar= <value></value>	0		Sets VarVal to <value></value>

8.4.4.1 Definition

This table is used to specify some format settings of the calendar object.

Parameter	M/O	Value	Default	Comment
#grid:visible	0	• yes	no	 show table grid
		• no		hide table grid
<pre>#navigationbar:</pre>	0	• yes	yes	show navigation bar
visible		• no		hide navigation bar
<pre>#horizontalheader:</pre>	0			horizontal header format:
format		• SingleLetter	04.00	 first letter of weekday name
		Day Short Davi	ShortDay	 short form of weekday name full weekday name
		 SnortDay LongDay 		 full weekday name bide berizental beader
		 CongDay Off 		
				Under Windows CE weekdays are
				displayed in english. Under Windows
				XP weekdays are localized.
<pre>#verticalheader:</pre>	0			Vertical header format:
format		 ISOWeekNu 	ISOWeekNu	 ISO week number
		mbers	mbers	Hide vertical header
		• off		
<pre>#header:font</pre>	0	Font		Header font
<pre>#header:color</pre>	0	<u>Farbe</u>		Header foreground color
<pre>#header:backcolor</pre>	0	<u>Farbe</u>		Header background color
<pre>#weekdays[mon]:</pre>	0	<u>Font</u>		
font				
<pre>#weekdays[mon]:</pre>	0	<u>Farbe</u>		
color		E		
#weekdays[mon]:	0	Farbe		
	0	Font		
font				
<pre>#weekdays[tue]:</pre>	0	Farbe		
color	Ŭ			
<pre>#weekdays[tue]:</pre>	0	<u>Farbe</u>		
backcolor				
<pre>#weekdays[wed]:</pre>	0	<u>Font</u>		
font				
<pre>#weekdays[wed]:</pre>	0	<u>Farbe</u>		
color				
<pre>#weekdays[wed]:</pre>	0	<u>Farbe</u>		
backcolor				
<pre>#weekdays[thu]:</pre>	0	<u>Font</u>		
		Forbo		
<pre>#weekaays[thu]: color</pre>		rarbe		
		Farbe		
backcolor				
#weekdays[fril:	0	Font		
font	Ŭ			
<pre>#weekdays[fri]:</pre>	0	<u>Farbe</u>		
color		· · · · · · · · · · · · · · · · · · ·		
<pre>#weekdays[fri]:</pre>	0	<u>Farbe</u>		
backcolor				
<pre>#weekdays[sat]:</pre>	0	<u>Font</u>		
font				

<pre>#weekdays[sat]: color</pre>	0	<u>Farbe</u>	
#weekdays[sat]: backcolor	0	<u>Farbe</u>	
<pre>#weekdays[sun]: font</pre>	0	<u>Font</u>	
#weekdays[sun]: color	0	<u>Farbe</u>	
#weekdays[sun]: backcolor	0	<u>Farbe</u>	

8.4.5 DiagSig

The *#DiagSig* (diagnostic signal) object is used to indicate errors by the flashing of the object. The *#DiagSig* can be used for example to indicate specific information about the cause of a fault on the machine in response to alarm messages. For example, the location of a fault can be indicated on a photograph of the machine (e.g. faulty limit switch). The *#DiagSig* object checks the specified text string with the current variable value, or whether the corresponding alarm number is active. It then activates the flashing point if the condition is fulfilled.



Parameters

0 1. '	
Opi	ect

Column A	M/O	Default	Description
#DiagSig	М		Diagnostic signal, display of flashing point

Text/File

Column B	M/O	Default	Description
<alarmno1>,</alarmno1>	0		#DiagSig is active if one of the specified alarms (alarm
<alarmno2>,</alarmno2>			number(s) is active.
			Θ
			Alarms are used if VarValue is empty!
<text1>,<text2>,</text2></text1>	0		Diagnose signal active if <i>VarValue</i> takes on one of the specified values.
			 Arbitrary texts, not only integer constants, may be specified.
			 All of the basic data types are supported.
			 The text may contain wildcards.
			Wildcards:
			? -> any single character
			* -> 0 or any number of characters

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni ng	Position and dimension

Color

Column H	M/O	Default	Description
<u>Color</u>	0	Current	Color of the #DiagSig
		foregrou	
		nd color	

Action

When the *#DiagSig object* is actuated, the following actions can be executed:

Column K	M/O	Default	Description
#Page= <name></name>	0		Page change to page <name>, e.g. with detailed information</name>
			on the error
Close	0		Close window
Close= <name></name>	0		Close window <name></name>

ActionLimit1

Column N	M/O	Default	Description
<action></action>	0		ActionLimit1 is executed when the object changes from
			active to inactive. The standard <u>LimitActions</u> are available.

ActionLimit2

<u>Column O</u>	M/O	Default	Description
<action></action>	0		Action Limit2 is executed when the object changes from
			linactive to active. The standard <u>LimitActions</u> are available.

VarValue

	Column P	M/O	Default	Description
--	----------	-----	---------	-------------

<variable></variable>	0	With no variable defined, a check is made whether the
		Alarm number configured under Text/File is active

VarType

Column O	M/O	Default	Description
		Deluunt	Description
Data type	0		All data types apart from DT and TIME are supported

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See VarState column

Option

Column S	M/O	Default	Description
	0		If no Flash option is selected, the <i>#DiagSig</i> object is output statically as a point
Flash	0		Flash at 0.5 Hz
FastFlash	0		Flash at 1 Hz
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

Init, Exit

Columns U, V	M/O	Default	Description
SetVar= <value></value>	0		Sets VarVal to <value></value>

Representation

If there is no communication to the PLC, the text configured under Text/File is shown in the object. If communication with the PLC is active, the object is only displayed if the condition applies.

Type of object	Example
Without communication	
With communication and condition = True	

8.4.6 DropDownList

The #DropDownList object enables an element to be selected from a static dropdown list.

Example

Text0	
Text1	
Text2	
Text3	
Text0	•

When an element is selected from the *#DropDownList* object, the *VarValue* is automatically set to the value of the associated image/text information. The first list element has the value 0.

Sample:

- Text0 \rightarrow Wert = 0
- Text1 \rightarrow Wert = 1
- Text2 \rightarrow Wert = 2

Parameters

Object

Column A	M/O	Default	Description
#DropDownList	М		Selection of an element from a static list

Text/File

Column B	M/O	Default	Description
<text0>,<text1>,</text1></text0>	M/O		Text strings for states 0,1, separated by ','. Texts can also be defined on <u>multiple lines</u> . Each text element is added to the DropDownList and shown as a list. Example
			Text0 Text1 Text2 Text3 Text0
<image0>, <image1>,</image1></image0>	O/M		Name of <u>image files</u> for states 0,1, separated by ','. Same as for text elements, only with images. Example

Font			
Column C Font	M/O	Default	Description

174 EPAM4-Manual

font	<fontname>.FNT</fontname>	0	<u>Current</u> font	Font for displaying text
------	---------------------------	---	------------------------	--------------------------

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni ng	Position and dimension

Color

Column H	M/O	Default	Description
<u>Color</u>	0	<u>Current</u>	Font color of text
		foregrou	
		nd color	

BackColor

Column I	M/O	Default	Description
<u>Color</u>	0	Current	Background color of text
		backgro	
		und	
		<u>color</u>	

Format

Column J	M/O	Default	Description
	0	Border= Standar d	Fixed format Border=Standard

Limit1

Column L	M/O	Default	Description
	0	VarType	Lower limit value
<constant></constant>		-Min	Numerical constant
<variable></variable>			Variable of type VarType

Limit2

Column M	M/O	Default	Description
	0	VarType	Upper limit value
<constant></constant>		-Max	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

ActionLimit1, ActionLimit2

<u>Columns N,O</u>	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

Column P	M/O	Default	Description
<variable></variable>	0		Value of the DropDownList

VarType

<u>Column Q</u>	M/O	Default	Description	
Numerical data types	0		All numerical data types are supported	

VarState

<u>Column R</u>	M/O	Default	Description
<variable></variable>	0		See <u>VarState column</u>

Option

Column S	M/O	Default	Description
Pos=< <i>Center</i> ¦Left¦ Right>	0	Pos=Le ft	Positioning of the text
Pos=Center			Center = centered
• Pos=Left			Left = left-justified
Pos=Right			Right = right-justified
MaxLines= <n></n>	0	Number of list element s	<n> stands for the maximum number of lines to be displayed. The remaining lines must then be scrolled. Default: All lines are displayed.</n>
PWL= <level></level>	0		Required password level for enabling (see <u>#Password</u>).
<i>LineHeight</i> = <pixel></pixel>	0	Font height	<pre><pixel> determines the line height. Without this option, the line height is adjusted to the text or pixel field.</pixel></pre>
<i>Timeout</i> = <sec></sec>	0		<sec> stands for the number of seconds until the DropDownList is closed again.</sec>
<i>Transparency</i> =< <u>color</u> >	0		The < <u>color</u> > specified in an image file is interpreted as transparent. Is only required for image formats that do not support transparency, e.g. PCX In EPAM4 it is better to use the <u>PNG</u> image format instead of this option.
<i>DX</i> = <width></width>	0	25	<width> stands for the width of the vertical scroll bar in pixels. The value 0 means that the scroll bar is to be hidden.</width>
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

Init, Exit

<u>Columns U, V</u>	M/O	Default	Description
SetVar= <constant></constant>	0		The SetVar= actions are available
SetVar= <variable></variable>			

Difference to EPAM3

- Option *Open=Up* is no longer supported. The list is opened automatically at the top if there is not enough space at the bottom.
- The *Coff* option is currently not supported
- An empty list is shown if VarValue contains a value outside of the range of the DropDownList
- When the DropDownList is opened all objects can be operated as normal

8.4.7 LogView

The #LogView object is used to directly display saved system messages in a table.

A system message consists of the following elements:

• TimeStamp

 $\,\circ\,$ Date and time of message.

- Class
 - o Info
 - Warning
 - \circ Error
 - Fatal
- Catalogue
 - o These exist as different groups (such as Project, VarPool). Listing of all messages
- ID
 - Unique number within the catalogue.

The appropriate number of columns are displayed.

Example

TimeStamp $- \nabla$	Catalogue	MsgId	MsgText
02-04 14:37:59	Project	23	start project 'DemoEpam4.txt'

Parameters

Column A	M/O	Default	Description			
#LogView	М		Display of the saved EPAM system messages			

Text/File

Object

Column B	M/O	Default	Description
<logview definition="">. txt</logview>	0		Name of the <u>LogView definition</u> . The <u>LogView definition</u> is specified in a separate table. This determines which data is displayed as well as the display order and format.

Font

<u>Column C</u>	M/O	Default	Description
	0	<u>Current</u> font	Font for the LogView list

X, Y, DX, DY

Columns D-G M/O Default Description	
Beladit Bescription	

Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension
		ng	

Color

Column H	M/O	Default	Description		
<u>Color</u>	0	<u>Current</u>	Font color		
		foregrou			
		nd color			

BackColor

<u>Column I</u>	M/O	Default	Description
<u>Color</u>	0	Current	Background color
		backgro	
		und	
		<u>color</u>	

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No	Type of frame.
		frame	

Option

Column S	M/O	Default	Description
DX= <width></width>	0	25	Defines the width of the vertical scroll bar in pixels
DY= <height></height>	0	25	Defines the height of the horizontal scroll bar in pixels

8.4.7.1 Definition

The table definition determines the display of the LogView table.

The table format settings consist of a <u>standard header</u> for all lists and the object-specific format settings for the individual columns. (<u>#Column</u>)

Each column to be displayed must be defined with the Column tag. The order from top to bottom is determined by the order of columns from left to right.

#Column	ID	Format	Width	Alignment	Options
---------	----	--------	-------	-----------	---------

Parameters for #Column tag:

Parame ters	M/O	Value	Default	Comment
ID	Μ	TimeSta mp Catalogu e Msgld MsgText		Specifies the column.
Format	0	Format	TimeStamp = %[dd-mm HH: MM:SS]DT	Format See also <u>#Variable</u>

⁰

C				
			Catalogue = %s Msgld = %d MsgText = %s	
Width	0	Integer	-1	Column width, in which: (width < 0) => automatic column width (width == 0) => column hidden (width > 0) => fixed column width in pixels If the total of all fixed column widths is wider than the width DX of the object, a horizontal scroll bar is displayed automatically.
Title	0	Text	Column-dependent	Column header
Alignm ent	0	left center right	left	Horizontal alignment of the text in the cell left-justified centered right-justified
Options				

Example

Тад	Value					
#Header:Height	0					
#Header:Font						
#Header:Color						
#Header:BackColor						
#Row:Lines	0					
#Row:Height	0					
#Grid:Hide	no					
#Grid:Color						
Column	ID	Format	Width	Title	Alignment	Options
#Column	TimeStamp	%[dd-mm HH:MM:SS] DT	-1	TimeStamp	left	
#Column	Catalogue	%s	-1	Catalogue	left	
#Column	Msgld	%d	-1	Msgld	left	
#Column	MsgText	%s	-1	MsgText	left	

8.4.8 Message

The #Message object is used to display messages in the form of text and image information.

Example

Bar3 Val > 100

Parameters

Object

Object			
Column A	M/O	Default	Description
#Message	М		Output of messages in the form of text or image information

Text/File

<u>Column B</u>	M/O	Default	Description
<message< td=""><td>0</td><td></td><td>Name of the <u>Message definition</u>.</td></message<>	0		Name of the <u>Message definition</u> .
definition>.txt			The message list is specified in a separate worksheet.

Font

<u>Column C</u>	M/O	Default	Description
	0	Current	Font for the messages
		font	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension
		ng	

Color

Column H	M/O	Default	Description
<u>Color</u>	0	<u>Current</u>	Font color
		foregrou	
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
<u>Color</u>	0	<u>Current</u>	Background color
		<u>backgro</u>	
		und	
		<u>color</u>	

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No	Type of frame
		πame	

Action

<u>Column K</u>	M/O	Default	Description
SetVar= <constant></constant>	0		The constant <constant> is assigned to the VarValue.</constant>
SetVar= <variable></variable>			The value of <variable> is assigned to the VarValue.</variable>
			variable> must be of the same data type as <u>VarValue</u> , i.e. <u>VarType</u> !

VarValue

<u>Column P</u>	M/O	Default	Description		
<variable></variable>	0		Actual message number. If no message text is defined, an "empty message" is displayed, i.e. the background is deleted.		

VarType

<u>Column Q</u>	M/O	Default	Description
BYTE	0		See <u>VarType</u> column
SINT			
USINT			
WORD			
INT			
UINT			
DINT			

VarState

<u>Column R</u>	M/O	Default	Description
<variable></variable>	0		See VarState

Option

<u>Column S</u>	M/O	Default	Description
Pos= <center¦left¦ Right></center¦left¦ 	0	Pos=Left	Positioning of the text:
 Pos=Left 			<i>Left</i> = left-justified
Pos=Center			Center = centered
Pos=Right			<i>Right</i> = right-justified
<i>Transparency=<</i> <u>color</u> >	0		If an image file was configured, the specified <u>color</u> is interpreted as transparent.
PWL= <x></x>	0		Required password level for enabling (see <u>#Password</u>).
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

9

Deleting messages from the PLC

For this define an empty message without text. In this case, only the rectangular area is deleted.

Difference to EPAM3

• Messages with format placeholder and additional variable values are currently not supported.

8.4.8.1 Message definition

The Message worksheet is where the message texts/image and the message-specific properties are assigned to the message numbers.

The Message worksheet has the following structure:
Number	Text/File	<u>Font</u>	<u>Color</u>	Backcolor
1	Any message 1	ARI16F.FNT	white	yellow
2	Any message 2	ARI20F.FNT	white	red
3	Any message 3 with variable %3d	ARI16F.FNT	white	red
4	Any message 4 with variable %2.2d	ARI20F.FNT	white	red
10	< <u>image</u> >			



The message number must be a unique integer value.

0

Message texts must be defined for all languages. An empty message is displayed if no text is defined. The default text is not displayed!



An image name can also be defined instead of the message text.

8.4.9 Meter

The *#Meter* object is used to display a numerical value <u>VarValue</u> in the range between <u>Limit1</u> and <u>Limit2</u> in the form of a meter.

Example



Parameters

Object

<u> </u>			
Column A	M/O	Default	Description
#Meter	М		Display of the numerical value as a meter

Text/File

Column B	M/O	Default	Description
			The meter object is drawn without text if no text is defined
<text></text>	0		A text can be displayed with the <u>options</u> Circle, Up and Down. With Circle selected, the defined text is displayed in the empty $\frac{1}{2}$, with Up selected, below the object, and with Down, above it.
<image/>	0		The name of an image file can be defined. This is used to display the background. In this case only the pointer is drawn across the image.

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current font	Font for displaying text

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension
		ng	

Color

Column H	M/O	Default	Description
<u>Color</u>	0	Current	Scale color, fill color = Backcolor
		foregrou	
		nd color	
Color,Color			Scale color, fill color

BackColor

<u>Column I</u>	M/O	Default	Description
<u>Color</u>	0	Current backgro	Background color
		<u>color</u>	

Format

<u>Column J</u>	M/O	Default	Description
A <i>ngle</i> = <start>, <degree>, <scale Graduations></scale </degree></start>	0		User-defined angle Start angle, angle in degrees, number of scale graduations If the angle is negative, the object moves clockwise. If the angle is positive, the object moves anticlockwise. The number of scale graduations are divided into 5 additional subsections. If the number of scale graduations equals 0, no scale is drawn. The scale can be displayed with an accuracy of one decimal place.
Circle	0		3/4 circle (the value specified at Limit1 is displayed at 225°)
Down	0		Semicircle down (the value specified at Limit1 is displayed at 180°)
Left	0		Semicircle to left (the value specified at Limit1 is displayed at 270°)

Right	0		Semicircle to right (the value specified at Limit1 is displayed at 270°)
Up	0		Semicircle up (the value defined at Limit1 is displayed at 180°)
		Circle	A circle is drawn if nothing is defined

Definition of the angle:



Examples





Action

Column K	M/O	Default	Description
SetVar	0		The SetVar actions are supported apart from SetVar=NotVar

Limit1

<u>Column L</u>	M/O	Default	Description
	М	VarType	Start value of the #Meter object.
<constant></constant>		-Min	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

Limit2

<u>Column M</u>	M/O	Default	Description
	0	VarType	End value of the #Meter object.
<constant></constant>		-Max	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

ActionLimit1, ActionLimit2

,				
Columns N,O	M/O	Default	Description	
<action></action>	0		The standard LimitActions are available.	

VarValue

<u>Column P</u>	M/O	Default	Description
<variable></variable>	0		The value of this variable determines the display value of the <i>#Meter</i> object

VarType

Column Q	M/O	Default	Description
Numerical data types	0		All numerical data types apart from LREAL

VarState

<u>Column R</u>	M/O	Default	Description
<variable></variable>	0		See VarState column

Option

<u>Column S</u>	M/O	Default	Description
<i>Transparency</i> =< <u>color</u> >			If an image file was configured, the specified <u>color</u> is interpreted as transparent.
Style=Gradient			This gives the colors of the object a gradient, i.e. the color of the pointer is brighter from left to right, the color of the #Meter object gets darker from inside to outside.
PWL= <x></x>			Required password level for enabling (see <u>#Password</u>).
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

Init, Exit

Columns U, V	M/O	Default	Description
<action></action>	0		The same actions are available as described for the Action
			parameter

0

The Limit action (e.g. color change) is executed when limit values are overshot or undershot. A Limit action, such as at 80% of the value is not possible. The <u>#VMeter</u> object can be used for this purpose.

Difference to EPAM3

- In EPAM4 the #Meter object has two color definitions for the scale color and the fill color.
- The Limit action Backcolor=<color> has an effect on the object background and not on the fill color

186 EPAM4-Manual

8.4.10 MvImg

This *#MvImg* object enables the rotation and moving of <u>images</u>. As the background can be set to be transparent, it is possible to overlay several of these objects.

Parameters

Ch	t	
()()	ест	
	000	

<u>Column A</u>	M/O	Default	Description	
#MvImg	М		Rotating and moving images	

Text/File

Column B	M/O	Default	Description
<image0>,</image0>	0		Any number of images can be defined if they are separated
<image1>,</image1>			by commas. The index determines which image is
			displayed, apart from the first image, which is used as the
			background and is drawn in all cases.

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension

BackColor

<u>Column I</u>	M/O	Default	Description
<u>Color</u>	0	Current	Background color
		backgro	
		und	
		<u>color</u>	

VarValue

Column P	M/O	Default	Description
<variable></variable>	М		Array with control information for displaying the images

The data is exchanged with the PLC via a word array of length of 5 (WORD[5]).

Variable	Name	Description
WORD [0]	Control	Flags: 0 Active 1 Redraw
WORD [1]	Index	Index of the image to be drawn
WORD [2]	x	Offset X of the image
WORD [3]	Y	Offset Y of the image
WORD [4]	Angle	Clockwise rotation angle in degrees

Word[0] - control flags

The Active flag is set as soon as the object is instantiated. If the object is deactivated, the Active flag is reset.

The Redraw flag is used by the PLC to initiate a redraw. The flag is reset if it was detected by Epam. **Word[1] - index of the image to be drawn**

The individual files are listed under Text/File, separated by commas. This parameter specifies which of these files are to be drawn. In this case, the index 0 stands for the second image as the first image is used as the background and is always output.

Word[2], Word[3] - position X and position Y

The position of the file to be drawn can be defined here with the coordinates. X and Y define the position of the top left corner of the image. If Pos=Center is specified under <u>Option</u>, the center of the file is positioned at this point.

Word[4] - rotation angle

This parameter defines the number of degrees by which the image is to be rotated clockwise. The rotation point is always located at the center of the bitmap.

VarType

<u>Column Q</u>	M/O	Default	Description
WORD[5]	М		Array of WORD[5]

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See VarState column

Option

<u>Column S</u>	M/O	Default	Description
		Image center	Rotation point is center of the image
Pos=Center	0		Rotation point is center of the object
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off
			VarState = 1 -> On

Init, Exit

		D. C. 11	
<u>Columns U, V</u>	M/O	Default	Description
SetVar= <value></value>	0		Sets VarVal to <value></value>

8.4.11 Recipe list

The #RecipeList object lists the saved recipe files of the recipe type defined by /S/APP/recipe:type.

The list consists of the following columns:

- File name without extension
- Recipe name
- Save date and time as per formatting.

The list is sorted by default by file name (ascending).

Example

File /	Name	DateTime
001	001	16:11:02 02-04-12
002	002	18:11:02 02-04-12

Parameters

Object

Column A	M/O	Default	Description	
#RecipeList	М		Display of the recipe files in a list	

Text/File

Column B	M/O	Default	Description
<recipelist< td=""><td>М</td><td></td><td>Name of the RecipeList definition.</td></recipelist<>	М		Name of the RecipeList definition.
definition>.txt			The RecipeList definition is defined in a separate worksheet.
			This determines which data is displayed as well as the
			display order and format.

Font

Column C	M/O	Default	Description
	0	<u>Current</u>	Font for the RecipeList
		<u>font</u>	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension

Color

Column H	M/O	Default	Description
<u>Color</u>	0	Current	Font color
		foregrou	
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
Color	0	Current	Background color
		backgro	
		und	
		<u>color</u>	

Format

Column J	M/O	Default	Description
<u>Format</u>	0	No	Type of frame, all except Border=Shadow
		frame	

Objects 189

Develor-Chondord	0	Chandard Ot Dardar
Border=Standard	0	Standard Qt-Border

VarValue

Column P	M/O	Default	Description
<variable></variable>	0		Line number of the currently selected recipe. The first line is 0. The selection is changed by changing the variable (e.g. in the PLC).

VarType

Column Q	M/O	Default	Description
WORD UINT INT	0		See <u>VarType</u> column

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See <u>VarState</u> column

Option

Column S	M/O	Default	Description
DX= <width></width>	0	25	Defines the width of the vertical scroll bar in pixels
DY= <height></height>	0	25	Defines the height of the horizontal scroll bar in pixels
<i>Type</i> = <recipetype></recipetype>	0		The <recipetype> defines the recipe for which the files are to be listed. The variable /S/APP/Recipe:type is set by this option to the <recipetype>.</recipetype></recipetype>
<i>Sort</i> = <column></column>	0		 This option enables the list to be sorted in ascending order. <column> defines the column by which the list is to be sorted. In other words, <column> can have one of the following values:</column></column> <i>File</i> <i>Name</i> <i>Time</i>

Loading/saving/deleting recipes

The recipe list shows all *.XML files of the current recipe type. A file can be selected and the <u>RecipeList:load</u>, <u>RecipeList:save</u> and <u>RecipeList:delete</u> button actions can be used to load, save or delete a recipe.

Changing between the recipe types

The <u>Recipe:Type=<type></u> button action can be used to change between different recipe types. This automatically changes the recipe directory.

Changing the recipe list directory

By setting the system variable <u>/S/APP/Recipe:Path</u> (via a button action, the current path can be changed.

0

Example

SetVar='A:' ...Load/save recipe from/to diskette SetVar='' ...Return to current directory

0

Sort recipe list

The recipe list can be sorted by file name, recipe name and time by setting the following button actions:

 RecipeList:
 ...Sort recipe list by file name

 sort=file
 ...Sort recipe list by recipe name

 RecipeList:
 ...Sort recipe list by file date

 sort=time
 ...Sort recipe list by file date

See also

<u>RecipeList action</u>



Filter the entries of a recipe list

The following system variables may be used to apply the filter expression.

• <u>/S/APP/</u> <u>RecipeList:</u> FileFilter

The expression in this variable applies to the column Name.

The expression in this variable applies to the column File.

<u>RecipeList:</u> NameFilter

• <u>/S/APP/</u>

> Wildcards are supported.

- > Set both variables to " to display all recipes.
- \succ The filter is case insensitive.

Difference to EPAM3

- EPAM4 recipes are saved as XML files
- Sort=Number, Sort=Type are not supported
- The EPAM3 format settings of the recipe list are not supported

8.4.11.1 Definition

The worksheet definition determines the display in the table.

The table format settings consist of a <u>standard header</u> for all lists and the object-specific format settings for the individual columns. (<u>#Column</u>)

Each column to be displayed must be defined with the Column tag. The order from top to bottom determines the order of columns from left to right.

#Column	ID	Format	Width	Alignment	Options
---------	----	--------	-------	-----------	---------

Parameters for #Column tag:

Parame	M/O	Value	Default	Comment
ters				

-		1		
ID	Μ	File Name DateTim e		Specifies the column.
Format	0	<u>Format</u>	%[dd-mm-yyHH:MM:SS]DT	Format to output DateTime of the recipe files See also <u>#Variable</u>
Width	0	Integer	-1	Column width, in which: (width < 0) => automatic column width (width == 0) => column hidden (width > 0) => fixed column width in pixels If the total of all fixed column widths is wider than the width DX of the object, a horizontal scroll bar is displayed automatically.
Title	0	Text	File Name Date/Time	Column header
Alignm ent	0	left center right	left	Horizontal alignment of the text in the cell • left-justified • centered • right-justified
IUDTIONS		1	1	

Example

Тад	Value					
#Header:Height	25					
#Header:Font						
#Header:Color						
#Header:BackColor						
#Row:Lines						
#Row:Height						
#Grid:Hide						
#Grid:Color						
Column	ID	Format	Width	Title	Alignment	Options
#Column	File		100	File	left	
#Column	Name		-1	Recipe	left	
				Name		
#Column	DateTime	%[dd-mm-yy HH:MM:SS] DT	150	Date/Time	left	

8.4.12 RadioButton

The #RadioButton object enables one of several options to be selected.

Example



The *#RadioButton* object compares the current object value with the setpoint of the *SetVar*=<x> action. If the value is the same as the setpoint, the corresponding RadioButton is activated or

otherwise stays inactive. If the *RadioButton* is actuated, the corresponding setpoint is set. Several *#RadioButton* objects can be defined in order to select several elements. The individual selection elements are associated by assigning the same variable.

Parameters

Object

<u>Column A</u>	M/O	Default	Description
#RadioButton	М		Selection of one of several options

Text/File

Column B	M/O	Default	Description
<text0>,<text1></text1></text0>	M/O		Text strings for states 0 (inactive),1 (active) separated by ','. <u>Multi-line</u> texts can also be defined.
<image0>,<image1></image1></image0>	O/M		Name of <u>image files</u> for states 0 (inactive),1 (active) separated by ','

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current font	Font for displaying text

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni na	Position and dimension

Color

<u>Column H</u>	M/O	Default	Description
Color0, Color1	0	<u>Current</u>	Font color of the text for states 0 (inactive),1 (active)
		foregrou	
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
Color0,Color1	0	<u>Current</u> backgro	Background color of the text for states 0 (inactive),1 (active)
		<u>und</u> color	

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No	Type of frame
		frame	

Action

Column K M/O Default Description				
	<u>Column K</u>	M/O	Default	Description

SetVar= <x></x>	Μ	When the <i>#RadioButton</i> object is actuated, the variable value is set. If the current variable value is the same as the value of SetVar= <x>, the RadioButton is active (state 1), otherwise inactive (state 0)</x>
#Page= <name></name>	0	The page <name> is opened.</name>
Close	0	Close highest window (=last window opened)
Close= <name></name>	0	Close window <name></name>

Limit1

Column L	M/O	Default	Description
	0	VarType	Lower limit value
<constant></constant>		-Min	Numerical constant
<variable></variable>			Variable of type VarType

Limit2

Column M	M/O	Default	Description
	0	<u>VarType</u>	Upper limit value
<constant></constant>		-Max	Numerical constant
<variable></variable>			Variable of type VarType

ActionLimit1, ActionLimit2

Columns N,O	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

Column P	M/O	Default	Description
<variable></variable>	0		Value of the RadioButton

VarType

Column Q	M/O	Default	Description
BOOL	0		All numerical data types are supported
BYTE			
SINT			
SUINT			
WORD			
INT			
DINT			
DWORD			
LINT			
LWORD			
REAL			

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See VarState column

Option

EPAM4-Manual

194

Column S	M/O	Default	Description
Pos={Center¦Left¦ Right}	0	Pos=Le ft	 Horizontal alignment of text or image Pos=Center centered Pos=Left left aligned Pos =Right right aligned
			The vertical alignment is centered per default.
VPos={Top¦Bottom}	0		 Vertical alignment of text or image VPos=Top top aligned VPos=Bottom bottom aligned
 Pos=Left 			<i>Left</i> = left-justified
 Pos=Right 			<i>Right</i> = right-justified
<i>Transparency</i> =< <u>color</u> >	0		If an image file was configured, the specified <u>color</u> is interpreted as transparent
PWL= <level></level>	0		Required password level for enabling (see <u>#Password</u>).
NoBeep	0		Suppresses the Beep signal
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

Init, Exit

<u>Columns U, V</u>	M/O	Default	Description
<action></action>	0		The same actions are available as described for the Action
			parameter

8.4.13 RemoteControl

The *#RemoteControl* object is used for the remote control of several EPAM applications networked via Ethernet. For example, it can be used to implement from a main visualization the remote control of an HMI unit which is located at a different plant section. The *#RemoteControl* object shows here the frame in which the current image of the remote HMI can be displayed. Inputs, for example, are likewise transferred to the remote HMI station and have the same effect as local operation on the remote device itself. Conversely, only changes to the screen content of the remote HMI station are transferred (cf. remote desktop).



A RemoteServer must be installed on the remote devices.

Parameters

Object

Column A, object M/O Default Description

#RemoteControl	М	Remote control of networked EPAM applications

Text/File

<u>Column B, Text/</u> <u>File</u>	M/O	Default	Description
	M/O	Empty string	IP address of the host from VarValue
192.168.0.%1	O/M		Part of the IP address of the host from VarValue
[<host>[:<port>]]</port></host>	O/M		IP address of the host and optionally the port, separated by a colon. Default port: 5900. e.g.192.168.0.99

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current	Font for the display of text messages
		font	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants	0	<u>Autom.</u> positioni ng	Position and dimension The dimension of the object should if possible be a 1:1 equivalent of the remote screen or an integer multiple of it. The screen content is zoomed in all cases, however, the quality and performance is not optimal.
Variable of type INT			

Color

Column H	M/O	Default	Description
<color></color>	0	<u>Current</u>	Font color
		foregrou	
		nd color	

Backcolor

Column I	M/O	Default	Description
<color></color>	0	Current	Background color
		backgro	
		und	
		<u>color</u>	

Action

Column K	M/O	Default	Description
OnError:#Page=	0		The #Page= <name> is called in the event of protocol errors</name>
<name></name>			
OnError:Close			The top page is closed in the event of protocol errors
OnError:Close=			The <i>#Page</i> = <name> is closed in the event of protocol errors</name>
<name></name>			

VarValue

<u>Column P</u>	M/O	Default	Description	
<variable></variable>	0		Variable with part or entire IP address	

VarType

Column Q	M/O	Default	Description
STRING	0		Part (replaces %1) or whole IP address as string
WORD UINT INT	0		Part IP address numerical, replaces %1 in Text/File column

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See <u>VarState</u> column

Option

Column S	M/O	Default	Description
<i>Password=</i> <password></password>	0		<pre><password> The password is transferred without encryption</password></pre>
VarStateOnOffInverte d	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On



RemoteControl of equally dimensioned screens

If a *#RemoteControl* object is used from one device to access another device with the same resolution (e.g. 320x240, full screen), an <u>Invisible button</u> must be configured on the device with the *#Page=xy* action and a timeout (e.g. at the bottom right, DX, DY 1 pixel). This enables remote control to be shut down automatically after the defined timeout without operation. Otherwise the device with the RemoteControl object must have a higher resolution (larger screen) than the remotely controlled device. For example, the screen of a 1/4VGA device (320x240) is displayed in a VGA device (640x480).

System variables

The following system variables are used in conjunction with the #RemoteControl object:

System variable	Description
/S/SYS/RCInput_enabled	Shows the current status:
	 1=Input enabled
	0=Input disabled
/S/SYS/RC_Password	Password for RemoteControl server (alternative to Password=
	option)
/S/SYS/RemoteClient.connected	Indicates whether a client is currently connected to the device
	(target).
	 0 = No connection
	 >0 = One or several connections

See also

<u>RemoteControl action</u>

Difference to EPAM3

 The following options are no longer supported: PROTO_NAME=RFB PROTO_MAJOR=3 PROTO_MINOR=3 PROTO_PORT=5900

8.4.14 RoleList

The *#RoleList* enables the user roles of *<u>#Authent</u>* to be displayed.

Parameters

Object

<u>Column A</u>	M/O	Default	Description
#RoleList	М		Object ID

Text/File

<u>Column B</u>	M/O	Default	Description
<definition>.txt</definition>	0		Name of the RoleList definition.
			The RoleList definition is defined in a separate worksheet.
			This determines which data is displayed as well as the
			display order and format.

Font

<u>Column C</u>	M/O	Default	Description
	0	Current	Font for the list text
		font	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension of the list
		ng	

Color

Column H	M/O	Default	Description
<u>Color</u>	0	<u>Current</u> foregrou	Font color
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
<u>Color</u>	0	<u>Current</u>	Background color

backgro	
und	
color	

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No	Type of frame, all except Border=Shadow, Border=RoundR
		frame	

Option

Column S	M/O	Default	Description
DX= <width></width>	0	25	Defines the width of the vertical scroll bar in pixels 0 -> Scroll bar is hidden
DY= <height></height>	0	25	Defines the height of the horizontal scroll bar in pixels 0 -> Scroll bar is hidden

8.4.14.1 Definition

This worksheet is used to define the appearance of the *#RoleList*.

Тад	М/ О	Value	Default	Comment
#Header: Height	0	Integer	0	Height of the header in pixels, for which: -1 = automatic height 0 = Hide header >0 Effective height in pixels
#Header: Font		<u>Font</u>		Font for caption
#Header: Color		<u>Color</u>		Color of the caption
#Header: Back Color		<u>Color</u>		Background color of the caption
#Row:Lines	0	Integer	0	Sets the line height so that the corresponding number of text lines can be shown in the table row.
#Row: Height	0	Integer	0	This parameter is used to set the line height in pixels. If this parameter is not greater than 0, the line height is set automatically. If this parameter is set, <i>#Row:Lines</i> is overwritten.
#Grid:hide	0	yes no	no	If this parameter has the value "yes", the grid of the table is not drawn.
#Grid:Color	0	<u>Color</u>	yes	Color of the table grid
#Column	Μ			See below

💡 Note:

Each column to be displayed must be defined with the Column tag. The order from top to bottom determines the order of columns from left to right.

#Column ID Format Width Alignment Options

Parameters for #Column:

Para	М/	Value	Defau	Comment
meter	0		lt	

s				
ID	Μ	ld Name Pwl		Specifies the column: > Role ID > Long name, language-dependent > Password level
Form at	0		%s, % d	Format (see <u>#Variable</u>)
Width	0	Integer	-1	Column width, in which: (width < 0) => Stretch (width == 0) => Hide (width > 0) => fixed width in Pixel
Title	0	<text></text>	ID	Column header
Align ment	0	left center right	left	Horizontal alignment of the text in the cell
Optio ns	0			

8.4.15 Signal

The #Signalobject is used to display different states. e.g. Off, On

Parameters

Object	
--------	--

<u>Column A</u>	M/O	Default	Description
#Signal	М		Display of different states

Text/File

200 EPAM4-Manual

Column B	M/O	Default	Description
			If no text or image is specified in the Signal object, its area is shown with the background color corresponding to state 0,1,2,
<text0>,<text1>,</text1></text0>	0		Text strings for states 0,1, separated by ','. Also multiple- line
			Positioning of text: Text is centered, however, the option <i>Pos</i> = <alignment> also allows horizontal alignment.</alignment>
			AUS EIN
<image0>,</image0>	0		Name of <u>image files</u> for states 0,1, separated by ','.
			Positioning of images: If a border is defined, the display of the images is centered. If no border is defined, the images are positioned in relation to the top left.
			Important!
			When images are defined, there should be no blanks
			name!

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	<u>Current</u> font	Font for displaying text

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension
		ng	

Color

Column H	M/O	Default	Description
Color0,Color1,	0	Current foregrou nd color	Font color of the text for states 0,1,

BackColor

<u>Column I</u>	M/O	Default	Description
Color0,Color1,	0	<u>Current</u>	Background color of the text for states 0,1,
		<u>backgro</u>	

© 2014 Grossenbacher Systeme AG

und	
<u></u>	
color	

Format

Column J	M/O	Default	Description
<u>Format</u>	0	No frame	Type of frame

Limit1

Column L	M/O	Default Description		
	0	<u>VarType</u>	Lower limit value	
<constant></constant>		-Min	Numerical constant	
<variable></variable>			Variable of type VarType	

Limit2

<u>Column M</u>	M/O	Default	Description
	0	<u>VarType</u>	Upper limit value
<constant></constant>		<u>-Max</u>	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

ActionLimit1, ActionLimit2

Columns N,O	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

Column P	M/O	Default	Description
<variable></variable>	0		Value of the signal Default behavior if no limits and limit actions have been defined: If the variable contains a value > (the number of defined states - 1) or a value < 0, the first state (value 0) is displayed.

VarType

Column Q	M/O	Default	Description
BOOL	0		All numerical data types are supported.
BYTE			
SINT			
SUINT			
WORD			
INT			
DINT			
DWORD			
LINT			
LWORD			
REAL			
STRING	0		The string is interpreted as filepath to a image file. If there is
WSTRING			no valid image-file the sting is displayed.

۷	a	rS	ta	te

<u>Column R</u>	M/O	Default	Description			
<variable></variable>	0		See VarState column			

Option

Column S	M/O	Default	Descriptio	n		
Pos={Center¦Left¦	0	Pos=Le	Horizontal 1	text, imag	e alignment	
Right}		ft	• Pos=Cei	nter cer	tered	
			 Pos=Lef 	t left	aligned	
			• Pos =Rig	<i>ght</i> righ	t aligned	
			_			
VPos=(Top Pottom)	0		Vortical ali	alignmer	toxt or image	
vros-{тор _і вошоті}	0		ventical allo	griment of	text of image	
			 VPos=T 	ор	top aligned	
			• VPos=B	ottom	bottom aligned	
Switch= <range0>: <range1>:</range1></range0>			The <i>Switch</i> option allows to enumerate value ranges.			
			range0	> 0		
			range0	-> 1		
			lf <i>VarValue</i> <i>VarValue</i> is The ranges	is matchi matching are sepa	ng the first range it is taken as 0, if g the second range it is taken as 1, rated by a colon.	
			Ranges ca	n be defin	ed as follows:	
			<n all<="" td=""><td>values les</td><td>ss than <n></n></td></n>	values les	ss than <n></n>	
			>n All	values gre	eater than <n></n>	
			in All	values gre	eater or equal than <i> and less or equal</i>	
			n Exa	actly <n></n>		
			Sample.:			
			Switch=<1	:1:25:	>5	
			Range	Index	Description	
			<1	0	all less than 1	
			1	1	1	
			25	2	from 2 to 5	
			> 5	3	greater 5	

Column S	M/O	Default	Description
<i>Transparency=<</i> <u>color</u> >	0		If an image file was configured, the specified <u>color</u> is interpreted as transparent.
AnimationDelay = <delay></delay>	Ο		Defines the animation speed in milliseconds. As soon as VarValue is greater than 0, the variable is incremented by one every <delay> milliseconds. If the maximum is reached, the value is reset to one. This enables animations to be implemented very easily by visualizing, for example, the running of a sequence of images, such as a rotating pump or similar, when the status is activated.</delay>
VarStateOnOffInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On
DisabledPaint= {Off¦On}	0	On	If the option <i>DisabledPaint=Off</i> is set, disabled signals will be displayed normal (grayed out). Same behavior as with EPAM3!

Init, Exit

Columns U, V	M/O	Default	Description
SetVar= <value></value>	0		Sets VarVal to <value></value>



Triggering a screen page change in the PLC

The signal object can also be used to trigger screen page changes on the basis of variable values by defining limit values (Limit1/2) and the action '#Page=<name>'. In this case, the Text/File column stays empty. The object must be defined globally in order for this screen page change to be executed at any location.

See also Global objects

Difference to EPAM3

• The format Frame=<x> is no longer supported, and is replaced with Backcolor=transparent.

8.4.16 Slider

Use the slider object to adjust variable value continuously.

Parameters

Object

<u>Spalte A</u>	M/O	Default	Description
#Slider	М		

Text/File

Spalte B	M/O	Default	Description
	0		

X, Y, DX, DY

<u>Spalten D-G</u>	M/O	Default	Description			
Ganzzahl-Konstanten Variable vom Typ <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension			
		ng				

BackColor

Spalte I	M/O	Default	Beschreibung
Color0, Color1,	0	Current	
		backgro	
		und	
		color	

Format

Spalte J	M/O	Default	Beschreibung	
Type={ Slider¦Scrollbar}	0	Type=Sli der	Type=Slider	Type=Scrollbar

Limit1

Spalte L	M/O	Default	Description
	0	VarType	Lower limit value
<constant></constant>		<u>-Min</u>	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

Limit2

<u>Spalte M</u>	M/O	Default	Description
	0	VarType	Upper limit value
<constant></constant>		-Max	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

ActionLimit1, ActionLimit2

Spalten N,O	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

Spalte P	M/O	Default	Description
<variable></variable>	0		The variable to be controled

VarType	/arType						
<u>Spalten Q</u>	M/O	Default	Description				
BOOL	0		All numerical data types are supported				
BYTE							
SINT							
SUINT							
WORD							
INT							
DINT							
DWORD							
LINT							
LWORD							
REAL							

VarState

<u>Spalte R</u>	M/O	Default	Description
<variable></variable>	0		See VarState column

Option

<u>Spalte</u> <u>S</u>	М/ О	De fau It	Description
VarSta teOnOf fInvert ed	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On
orienta tion= {vertica l¦ horizon tal}	0	aut om	Defines the orientation • orientation=vertical > bottom up Limit1 to Limit2 • orientation=horizontal > left to right Limit1 to Limit2 Per default the orientation is set automatically: DY >= DX > orientation=vertical DY < DX
inverte d	0		Swaps the presentation of <i>Limit1</i> und <i>Limit2.</i> > <i>horizontal: Limit2</i> left, <i>Limit1</i> right > <i>vertical: Limit2</i> bottom, <i>Limit1</i> top

Init, Exit

Spalten U, V	M/O	Default	Description
SetVar= <value></value>	0		

The style of the slider may be customized through the *application.qss*: Siehe auch: <u>customizing-qslider</u>

```
/*Vertical*/
QSlider::groove:vertical{
      border: 1px solid #637EB8;
      background: white;
      width:7px;
      border-radius: 3px;
QSlider::add-page:vertical {
      background: qlineargradient(x1: 0, y1: 0, x2: 0, y2: 1, stop: 0 #ABC
      border: 1px solid #154A98;
      width: 10px;
      border-radius: 4px;
QSlider::sub-page:vertical {
      background: #fff;
      border: 1px solid #777;
      width: 7px;
      border-radius: 4px;
QSlider::handle:vertical{
      background: qlineargradient(x1:0, y1:0, x2:1, y2:1, stop:0 #fff, sto
      border: 1px solid #777;
      height: 30px;
      margin-left: -11px;
      margin-right: -11px;
      border-radius: 3px;
QSlider::handle:pressed:vertical{
      background: qlineargradient(x1:0, y1:0, x2:1, y2:1, stop:0 #ff0000,
```

8.4.17 Switch

The #Switch object is used for switching various states. e.g. Off, On With every actuation the next state is switched. Once the last state has been reached, the first state is restored.

Parameters

Object

Column A	M/O	Default	Description
#Switch	М		Switch for switching different states

Text/File

Column B	M/O	Default	Description
		Empty string	Only the background is displayed accordingly if text/image are not defined
<text0>,<text1>,</text1></text0>	0		Text strings for states 0,1, separated by ',', also <u>on</u> multiple lines
			Positioning of text: Text is centered, however, the option <i>Pos</i> = <alignment> also allows horizontal alignment.</alignment>
			Aus Ein
<image0>,</image0>	0		Name of <u>image files</u> for states 0,1, separated by ','.
<innage i="">,</innage>			Positioning of images: If a border is defined, the display of the images is centered. If no border is defined, the images are positioned in relation to the top left.
			• •

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	<u>Current</u> font	Font for displaying text

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension
		ng	

Color

Column H	M/O	Default	Description
Color0,Color1,	0	<u>Current</u>	Font color of the text for states 0,1,
		foregrou	
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
Color0, Color1,	0	Current	Background color of the switch for states 0,1,
		backgro	
		und	
		<u>color</u>	

Format				
<u>Column J</u>	M/O	Default	Description	
<u>Format</u>	0	No frame	Type of frame	

Action

<u>Column K</u>	M/O	Default	Description
		SetVar+ 1	When the #Switch object is actuated, the variable value is automatically incremented by 1 and the corresponding image/text information is displayed. The value 0 is set if the actual value is greater than the number of defined states - 1

Limit1

<u>Column L</u>	M/O	Default	Description
	0	VarType	Lower limit value
<constant></constant>		-Min	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

Limit2

<u>Column M</u>	M/O	Default	Description
	0	VarType	Upper limit value
<constant></constant>		-Max	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

ActionLimit1, ActionLimit2

<u>Columns N,O</u>	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

<u>Column P</u>	M/O	Default	Description
<variable></variable>	0		Value of the switch. Default behavior if no limits and limit actions have been defined: If the variable contains a value > (number of defined states - 1), the last state is displayed. If the variable contains a value < 0, the first state is displayed.

VarType

Column Q	M/O	Default	Description
Numerical data types	0		All numerical data types are supported

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See VarState column

Option			
<u>Colum</u> <u>n S</u>	M/ O	De fau It	Description
Pos={ Center¦ Left¦ Right}	0	Po s= Lef t	 Horizontal text, image alignment Pos=Center centered Pos=Left left aligned Pos =Right right aligned The vertical alignment is centered per default
VPos={ Top¦ Bottom}	0		 Vertical alignment of text or image VPos=Top top aligned VPos=Bottom bottom aligned
Transpa rency=< <u>color</u> >			If an image file was configured, the specified <u>color</u> is interpreted as transparent.
<i>PWL</i> = <level></level>			Required password level for enabling (see <u>#Password</u>).
VarStat eOnOffI nverted	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

Init, Exit

Columns U, V	M/O	Default	Description
SetVar= <constant> SetVar=<variable></variable></constant>	0		The SetVar= actions are available

8.4.18 Textlist

The *#TextList* object is used to display text files as a list within a rectangular area. The *#TextList* object supports ASCII,UNICODE and a <u>Subset from HTML 3.2 und 4</u>.

Parameters

Object

Column A, object	M/O	Default	Description	
#TextList	М		Display of text files in a list	

Text/File

<u>Column B, Text/</u> File	M/O	Default	Description

210 EPAM4-Manual

<filename> [#<anchor>]</anchor></filename>	0	Filename with on optional HTML-anchor Sample: manual.html#chapter3 → Loads the document manual.html and scrolls to anchor chapter3. Following file extensions are supported: • TXT • HTM • HTML
< <u>variable</u> >	0	The filename may be be supplied by a variable of type STRING/WSTRING. Consider first to use <u>VarValue</u> !

Font

C Font column	M/O	Default	Description
<fontname>.FNT</fontname>	0	<u>Current</u> font	Font for displaying the text list

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants	0	<u>Autom.</u> positioni ng	Position and dimension of the text list
Variable of type INT			

Color

Column H	M/O	Default	Description
Font color	0	<u>Current</u>	Font color of the text list
		foregrou	
		nd color	

Backcolor

<u>Column I</u>	M/O	Default	Description
Background color	0	Current backgro und color	Background color of the text list

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No	Format to display the text list except for Border=Shadow
		frame	
Border=Standard	0		Standard Qt-Border

VarValue

<u>Column P</u>	M/O	Default	Description

IV.

0		Numerical variable:
		The variable stores the position of the vertical scroll bar. This
		causes the text to be displayed at the same position the
		next time the operator opens this screen hade
		next time the operator opens this screen page.
		String variable.
		The file name of the file to be displayed is transferred in the
		variable.
		The variable may contain the filename including an optional
		HTML-anchor, or a bare anchore.
		G
		Document navigation by #Button-Action
		Navigation can be realized via hyperlinks. But sometimes it
		may be useful to control the document from outside the
		#TextList, e.g. by #Button-Action.
		Sample:
		SetVar=manual.html
		→ Loads manual.html and displays from the start.
		SetVar=manual.html#index
		→ Loads manual.html and scrolls to anchor index.
		SetVar=#chanter3
		→ Scroll current document to anchor #chapter3
	0	0

VarType

Column Q	M/O	Default	Description
STRING WSTRING	0		See <u>VarType</u> column
UINT WORD			

VarState

<u>Column R</u>	M/O	Default	Description
<variable></variable>	0		See <u>VarState</u> column

Option

<u>Column S</u>	M/O	Default	Description
<i>DX</i> = <width></width>	0	25	<width> stands for the width of the vertical scroll bar in pixels. 0 = Hide scroll bar</width>
DY= <height></height>	0	25	<height> stands for the height of the horizontal scroll bar in pixels 0 = Hide scroll bar</height>

User-specific display of the scroll bar See <u>Qt style sheet</u>

Difference to EPAM3

- The display of CSV files is no longer supported. These can be displayed as HTML files.
- The Format option is no longer necessary.

8.4.19 Trend

The *#Trend* object can be used to display data recorded with the <u>#Datalog</u> object in the form of a trend (max. 4 curves in one trend). The values can be displayed online and offline. The current section can be manipulated by means of <u>#Button actions</u>.

The trend is normally shown as a Y/T graph. The *Format_time=%Id* option is used to display the value of the time stamp (double word in Datalog) as an integer (1,2,3,...). This enables X/Y graphs such as for temperature controllers to be displayed.

Example



Parameters

Object

Column A	M/O	Default	Description
#Trend	М		Trend object

Text/File

<u>Column B</u>	M/O	Default	Description
< <u>Trend definition</u> >.txt	М		Name of the trend <u>definition</u> contains the attribute for
			displaying the #Trend object.

Font

<u>Column C</u>	M/O	Default	Description
<fontname>.FNT</fontname>	0	<u>Current</u>	Font for displaying the axis scales
		font	

X, Y, DX, DY

-, -,,				
Columns D-G	M/O	Default	Description	
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni ng	Position and dimension	

Color

<u>Column H</u>	M/O	Default	Description
Color	0	<u>Current</u>	Color for inscription and background of the curve area
		foregrou	
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
Color	0	Current	Color for background of the edge area and cursor
		backgro	
		und	
		color	

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No	Type of frame, all except Border=Shadow
		frame	
Border=Standard	0		Standard Qt-Border

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See <u>VarState</u> column

Option

Column C	MIO	Defeult	Description
<u>column 5</u>		Default	Description
<i>DX</i> = <width></width>	0	25	Defines the width of the vertical scroll bar in pixels. 0 = Hide scroll bar
DY= <height></height>	0	25	Defines the height of the horizontal scroll bar in pixels 0 = Hide scroll bar
<i>type</i> = <name></name>	0		<name> stands for the ID or name of the Trend object. This ID is relevant for button actions. If it is not set, the name of the text file without the file ending is used as the ID. If the <u>Datalog Name</u> is not set in the definition file, <name> is used. A trend definition can thus be used for different #Datalog objects.</name></name>
<i>datalog</i> = <name></name>	0		If the <u>Datalog Name</u> is not set in the definition file, <name> is used.This option has precedence over <i>type</i>=<name>. The parameter <name> may contain index variables. Sample: datalog=starter%/S/TMP/StarterIdx%</name></name></name>
cursor=off	0		Deactivates the cursor.

See also

• Trend action

8.4.19.1 Trend definition

The Trend worksheet contains the definitions for the <u>#Trend object</u>. A <Trend> worksheet is created for each *#Trend* object and referenced via the worksheet name (Trend ID). Several *#Trend* objects can use the same <Trend> worksheet.

Parametern ame	Paramete rtyp	M/O	Default	Comment
#Title	<text></text>	0		Title
#Flow	{ Left2Right Right2Left }	0	Left2Ri ght	 Trend orientation: Left2Right or Right2Left Left2Right New values are added from the left The curve is shifted to the right Right2Left New values are added from the right The curve is shifted to the left
#Datalog	< <u>Datalog</u> >	0		Name of the associated <u>Datalog object</u> without file extension ". txt" If this parameter isn't defined but the option <i>Type=<type></type></i> , <i><type></type></i> is used as <i>#Datalog</i> name. That means, that a <i>Datalog</i> with name <i><type></type></i> must exist! In case you have multiple trends with equal definitions except a different <i>#Datalog</i> , you must create only one Trend definition, leave this parameter blank and define the option type= <datalog> instead.</datalog>
#Cursorcolo r	<u>Farbe</u>	0	Black	Cursor color
#Xscalefgc olor	<u>Farbe</u>	0	Color	Font color of X axis
#Xscalebgc olor	<u>Farbe</u>	0	Back C olor	Background color of X axis
#Format_ti me	<u>Zeit-</u> Format	0		Time format of the X axis or %Id for the display of X/Y graphs (the first value in Datalog is then interpreted as an index)
#Format_da te	<u>Datums</u> Format	0		Date format of the X axis
#Range	Ganzzahl	М		Range of the X axis
#GridX	Ganzzahl	М		Grid of the X axis
#ScaleX	{On¦Off}	0	On	X scale off/on
#XZoomMa x	Ganzzahl	0		max. zoom factor of the X axis
#Gap	Ganzzahl	0	0	max. gap between measured values that are displayed connected
#Y	Titel 1	0		1st Yaxis title
#Color	<u>Farbe</u>	0	Color	Color of the curve

Parametern ame	Paramete rtyp	M/O	Default	Comment
#PenWidth	Integer	0	1	Line thickness of the curve in pixels
#ScaleColo r	<u>Farbe</u>	0	Color	Scale color
#YScaleWi dth	Integer	0		Width to reserve for the scale, automatically calculated if omitted. Must be defined if <i>Max</i> or <i>Min</i> is variable.
#Max	num. constant or a variable	Μ		Max for scaling
#Min	num. constant or a variable	М		Min for scaling
#GridY	Ganzzahl	0	#Max- #Min	Grid for inscription of Y axis The Grid may be specified with a factor in the form / <factor> Sample: /4 This divides the scale into four segments, no matter of #Min- #Max.</factor>
#Grid	{On¦Off}	0	On	Show (On) or hide (Off) grid
#Scale	{On¦Off}	0	On	Show (<i>On</i>) or hide (<i>Off</i>) grid Y-scale
#DataLogC ol	Ganzzahl	0	x+1	Column of the curve value in the Datalog file
#Y	Titel 2			2nd Yaxis title
				As above for 2nd curve
#Y	Titel 3			3rd Yaxis title
				As above for 3rd curve
#Y	Titel 4			4th Yaxis title
				As above for 4th curve

8.4.20 UserList

#UserList enables the users of *#Authent* to be displayed.

Parameters

Object					
<u>Column A</u>	M/O	Default	Description		
#RoleList	М		Object ID		

Text/File

216 EPAM4-Manual

Column B	M/O	Default	Description
<definition>.txt</definition>	0		Name of the <u>UserList definition</u> . The <u>UserList definition</u> is specified in a separate worksheet. This determines which data is displayed as well as the
			display order and format.

Font

Column C	M/O	Default	Description
	0	Current	Font for the list text
		font	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni ng	Position and dimension of the list

Color

Column H	M/O	Default	Description
<u>Color</u>	0	Current	Font color
		foregrou	
		nd color	

BackColor

Column I	M/O	Default	Description
<u>Color</u>	0	<u>Current</u>	Background color
		backgro	
		<u>und</u>	
		<u>color</u>	

Format

Column J	M/O	Default	Description
<u>Format</u>	0	No	Type of frame, all except Border=Shadow, Border=RoundR
		frame	

Option

Column S	M/O	Default	Description
<i>DX</i> = <width></width>	0	25	Defines the width of the vertical scroll bar in pixels 0 -> Scroll bar is hidden
DY= <height></height>	0	25	Defines the height of the horizontal scroll bar in pixels 0 -> Scroll bar is hidden
Filter:Role= <roleid></roleid>			Only the users of the RoleID role are displayed

See also:

#Authent

<u>#Button</u> action
8.4.20.1 Definition

This table is used to define the appearance of the *#UserList*.

Tag	М/ О	Value	Default	Comment
#Header: Height	0	Integer	0	Height of the header in pixels, for which: -1 = automatic height 0 = Hide header >0 Effective height in pixels
#Header: Font		<u>Font</u>		Font for the caption
#Header: Color		<u>Color</u>		Color of the caption
#Header: Back Color		<u>Color</u>		Background color of the caption
#Row:Lines	0	Integer	0	Sets the line height so that the corresponding number of text lines can be shown in the table row.
#Row: Height	0	Integer	0	This parameter is used to set the line height in pixels. If this parameter is not greater than 0, the line height is set automatically. If this parameter is set <i>#Row:Lines</i> is overwritten.
#Grid:hide	0	yes no	no	If this parameter has the value "yes", the grid of the table is not drawn.
#Grid:Color	0	Color	yes	Color of the table grid
#Column	М			See below



Each column to be displayed must be defined with the Column tag. The order from top to bottom determines the order of columns from left to right.

#Column	ID	Format	Width	Alignment	Options
---------	----	--------	-------	-----------	---------

Parameters for #Column:

Para meter s	M/ O	Value	Default	Comment
ID	Μ	User Name RoleId RoleNa me Enable d LastLo gin PwdCh anged		Specifies the column: > User ID > Long name > Role ID > Role name (language-dependent) > Account status (active=[x], inactive=[]) > Date/time of last login > Date/time of last password change

218 EPAM4-Manual

Form at	0		%s, %d, or %[dd-mm HH:MM:SS]DT	Format (see <u>#Variable</u>)
Width	0	Integer	-1	Column width, in which: (width < 0) => Stretch (width == 0) => Hide (width > 0) => fixed width in Pixel
Title	0	<text></text>	ID	Column header
Align ment	0	left center right	left	Horizontal alignment of the text in the cell
Optio ns	0	editabl e		If this option is set, the values of the columns <i>RoleName</i> and <i>Enabled</i> can be edited directly.

8.4.21 Variable

The #Variable object is used to display and/or input a numerical/alphanumerical variable.

Example



Parameters

Obj	ect
-----	-----

Column A	M/O	Default	Description
#Variable	М		Display or/and input of a numerical/alphanumerical variable

Text/File

Column B	M/O	Default	Description
[text] <format>[text]</format>	М		Static text can be combined with a format. These formats
			are described below.

📕 See also <u>Unit systems</u>

Formats

The following formats can be used to display the text in the variable object. See the basic template for an explanation:

Text %[Sign][IntegerDigits].[DecimalPlaces][Type] Text

Sign

Sign	Description
+	If this character is placed in front, a sign value ("+" or "-") is always specified.
0	If this character is placed in front, all unused characters are filled with 0.

Example

Input	Format	Output
10000	%+d	"+10000"
10000	%08d	"00010000"

Integer digits

Number, specifies the number of places to the left of the decimal point.

Example

Input	Format	Output
10000	%8d	" 10000"

Decimal places

Number, specifies the number of places to the right of the decimal point.

Example

Input	Format	Output
100.1111	%4.2f	" 100.11"

т	'v	n	Δ
	y	μ	e

Туре	Description	Bits	
b	Binary representation	16	
lb	Binary representation	32	
llb	Binary representation	64	
d or i	Signed integer representation	16	
ld or li	Signed integer representation	32	
lld or lli	Signed integer representation	64	
u	Unsigned integer representation	16	
lu	Unsigned integer representation	32	
llu	Unsigned integer representation	64	
f or g	Signed floating point representation	32	
lf or lg	Signed floating point representation	64	
с	Letter	8	
S	Text		
х	Hexadecimal representation	16	
lx	Hexadecimal representation	32	
llx	Hexadecimal representation		
е	Exponential representation	64	

Integer values with decimal point

Integer values can be displayed on screen with a decimal point. A value of 1000 grams can thus be displayed on screen as kg 1.000 and also input in this way. In most cases, this eliminates the need for complex floating point arithmetic on the PLC (speed!).

Sample: %3.2d

0

Date and time formats

The DT and Time data types are configured as follows. This must be used for both the input and for the output screen:

%[<printout>]DT
%[<printout>]T
DT

220 EPAM4-Manual

Format	Description	Number of characters	Value range
d	Day of the month, represented by two digits	2	01-31
m	Month of the year, represented by two digits	2	01-12
у	Year, represented by two digits	2	00-99
Y	Year, represented by four digits	4	0001-9999
Н	Hour, represented by two digits	2	00-23
М	Minute, represented by two digits	2	00-59
S	Second, represented by two digits	2	00-59
Ρ	AM/PM - representation The hours are converted and P is replaced by AM or PM. See also: <u>AM/PM time system</u>	2	01-12 AM and 01-12 PM
р	am/pm - representation The hours are converted and p is replaced by am or pm. See also: <u>AM/PM time system</u>	2	01-12 am and 01-12 pm
а	Abbreviated day of the week, in the language of the operating system	2	Mon,Tue,Wed,Thu,Fri, Sat,Sun
A	Day of the week in full, in the language of the operating system		Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday
b	Abbreviated month name, in the language of the operating system	3	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec
В	Full month name, in the language of the operating system		January, February, March, April, May, June, July, August, September, October, November, December

Examples:

Format	Output
%[d.m.Y H:M:S]DT	26.01.2012 14:54:36
%[dd.mm.YY HH:MM:SS]DT	26.01.2012 14:54:36
%[d.m.Y H:M:S P]DT	26.01.2012 02:54:36 PM
%[A, d.B Y]DT	Thursday, 26 January 2012

Time

Format	Description	Number of characters	Value range
Н	Hour, represented by one digit	1	0-9
HH	Hour, represented by two digits	2	00-23
Μ	Minute, represented by one digit	1	0-9
MM	Minute, represented by two digits	2	00-59
S	Second, represented by one digit	1	0-9
SS	Second, represented by two digits 2		00-59
MS	Millisecond, represented by one digit	1	0-9

© 2014 Grossenbacher Systeme AG

Format	Description	Number of characters	Value range
MSMS	Millisecond, represented by two digits	2	00-99
MSMSMS	Millisecond, represented by three digits	3	000-999

Examples

Format	Output
%[H:M:S:MS]T	9:3:7:4
%[HH:MM:SS:MSMSMS]T	09:03:07:004

If the formatted text should contain %-character, then two %-characters must be defined. Example:

Format	Ausgabe
Val: %d %%	Val: 0 %

Font

<u>Column C</u>	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current	Font for displaying the scale
		font	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni na	Position and dimension

Color

Column H	M/O	Default	Description
<u>Color</u>	0	<u>Current</u>	Font color
		foregrou	
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
Color	0	Current	Background color
		backgro	
		und	
		<u>color</u>	

Format

<u>Column J</u>	M/O	Default	Description
<u>Format</u>	0	No frame	Type of frame

Action			
<u>Column K</u>	M/O	Default	Description
	0		Only the value is displayed if an action is not specified.
SetVar	0		The SetVar actions are supported
#Page= <name></name>	0		Opens the keyboard page and sets the input focus
			Sample #page=kbd_%/S/SYS/Kbd_Layout%
			Opens a keyboard page depending on a system variable, e. g. for country specific keyboard layouts.
#Page= <name>%/S/ App/keyb layout%</name>	0		Opens the keyboard page according to a system variable, e. g. for country-specific keyboard layouts
Edit			Activates the Edit mode

Limit1

Column L	M/O	Default	Description
	0	VarType	Lower limit value of the variable
<constant></constant>		<u>-Min</u>	Numerical constant
<variable></variable>			Variable of type <u>VarType</u>

Limit2

Column M	M/O	Default	Description
	0	<u>VarTyp</u>	Upper limit value of the variable
<constant></constant>		<u>e-Max</u>	Variable of type <u>VarType</u>
<variable></variable>			

ActionLimit1, ActionLimit2

Columns N,O	M/O	Default	Description
<action></action>	0		The standard LimitActions are available.

VarValue

Column P	M/O	Default	Description
<variable></variable>	0		Value of the variable

VarType

<u>Column Q</u>	M/O	Default	Description
<u>Data type</u>	М		All data types are supported

VarState

Column R	M/O	Default	Description
<variable></variable>	0		see <u>Object status</u>

Option

<u>Colum</u> <u>n S</u>	М/ О	De fau It	Description
Pos={ Center¦ Left¦ Right}	0	Po s= Lef t	 Horizontal text, image alignment Pos=Center centered Pos=Left left aligned Pos =Right right aligned The vertical alignment is centered per default
VPos={ Top¦ Bottom}			 Vertical alignment of text or image VPos=Top top aligned VPos=Bottom bottom aligned
Mirror	0		Displays (mirrors) the current input of the #Variable object with the input focus, e. g. in the Keyboard page to display the currently edited variable
Set_foc us	0		As soon as the object was loaded, it is set to the input mode
HelpTex t= <n></n>	0		If the object has the focus, the system variable <u>/S/SYS/HelpText</u> is set to <n>. The variable is reset to 0 as soon as it no longer has the focus. <n> must be an integer constant. In order, for example, to display a Help text in the Keyboard page</n></n>
Verify	0		 This option is used for verifying the input (e.g. for password input). The same value must be entered twice. If the same value was entered both times, the Close action is executed. The <u>/S/SYS/VariableVerify</u> system variable of type WORD displays the status: 0 means that nothing has been entered yet. 1 means that the first value was entered. 2 means that the second value was incorrectly entered and that the input has to be repeated. 3 means that the same value was entered twice (verified) This option can not be combined with set_focus!
Cloself Ok	0		If the entered value is within the limits, the Close action is executed.
Type=p assword	0		The object can be disguised for entering passwords. All characters are replaced with ^{**} during the input.
<i>PWL</i> = <level ></level 	0	P WL =0	Required password level for enable see also <u>#Password</u> object
select	0		Applies to (W)STRING Types only! The existing string value will be selected, when the #variable object gets the input focus. erhält. So existing string value will be completely overwritten with the first character entered.
VarStat eOnOffI nverted	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

I

Function

<u>Columns T</u>	M/O	Default	Description
<unit>function0,<!--<br-->unit></unit>	0		Conversion functions (see Unit systems)

Init, Exit

<u>Columns U, V</u>	M/O	Default	Description
<action></action>	0		The same actions are available as described for the Action
			parameter

Edit

In order to edit a variable object, it must be given the input focus. The input focus is set via the following action:

Action	Description
#Page= <name></name>	With this action a Keyboard page is normally opened.
Edit	Edit via hard keyboard

The input focus can be set via the following option:

Option	Description
Set_focus	The focus is automatically set after the page is generated.

Edit mode

If the variable object is given the input focus, it is in Insert mode.

Insert mode

Characters are inserted at the cursor position as long as space is still available. If there is no more space available, no more characters are inserted. However characters are also not overwritten. The size of the input field is determined by the format string.

The format string determines the behavior.

Format string	Behavior
%s	With a string, the cursor is placed at the end of the text where all inputs are added.
%d, etc.	With all other formats, the content is not displayed but overwritten.

Selection mode

If the object with the active focus is clicked, the text is selected. If the text was already selected, this selection is cancelled.

Keyboard inputs have an effect on the entire selection:

Кеу	Behavior
Backspace or Delete	Deletes the entire selection
Character	All selected characters are overwritten
Control character	Cancels the selection



Time/date function

The DT variable type enables the time/date display in conjunction with the <u>/S/SYS/DateTime</u> system variable. The actual time is refreshed once a second. Special system variables are available for the time and date input.

See also

System variables



Actual time on the PLC

To transfer the actual time to the PLC, the #Sys2PLC object can be used in conjunction with the time system variables.



System variables

The following system variables are defined at the start of the input with the actual values and can, for example, be displayed on the screen keyboard page:

/S/SYS/Edit val /S/SYS/Limit1 /S/SYS/Limit2 /S/SYS/HelpText

- ...Last value before the input data type WSTRING
- ...Lower limit value data type WSTRING

- ... Upper limit value data type WSTRING ...Contains the current Help text number data type WORD

Screen keypad

If a screen keyboard is called via the variable action #Page=<name>, this must be opened as a window! In other words, the screen page of the variable object and the keyboard must have different sizes or the keyboard page will be defined with the Popup option.

Difference to EPAM3

• Option *Mirror* replaces system variable s input val

8.4.21.1 Unit systems

Conversion functions

The variable object can convert values of numerical variables for the display/input. This enables a value to be displayed in different unit systems.

The unit system is selected via Button action <u>unit=<index></u>. The set unit system can be displayed with the /S/APP/UnitIdx system variable. The unit system is changed by changing the /S/APP/ UnitIdx system variable.

The conversion functions for the different unit systems are defined as follows in the Function column:

<unit>function0,function1,...</unit>

/S/APP/UnitIdx specifies which of the defined functions are used:

 $0 \rightarrow function0$

1 -> function1

. . .

 The conversion is executed internally with an LREAL data type. The result is written in the target data type. The decimal places for integer data types are truncated.

• Instead of the function, an empty string can be used so that no conversion takes place!

Function	Meaning
Speed	
m/min_ft/min	m/min -> ft/min
m/min_inch/min	m/min -> inch/min
mm/min_ft/min	mm/min -> ft/min
mm/min_inch/min	mm/min -> inch/min
Cutting rate	
cm2/min_inch2/min	cm²/min -> inch²/min
 Aroa	
m2 inch2	$m^2 \rightarrow inch^2$
cm2_inch2	cm ² -> inch ²
Length	
mm_inch	mm -> inch
cm_inch	cm -> inch
m_inch	m -> inch
m_ft	m -> ft
Tomporofuro	
Mass / spec. weight	
kg_lbs	kg -> lbs
kg/dm3_lbs/inch3	kg/dm ³ -> lbs/inch ³
Pressure	
bar_psi	bar -> psi

The following predefined functions are available:

Example:

<unit>,°c_°f</unit>

/S/APP/UnitIdx=0 -> No conversion /S/APP/UnitIdx=1 -> Conversion from °C to °F

User-defined functions

Simple functions can however be defined by the user. For this the operators *,*I*,+,- are supported. An operand (floating point number) must follow an operator. Any operator-operand combinations can be

linked and the result of the first operation transferred to the next operation.

Example:

<unit>,*1.8+32</unit>

```
/S/APP/UnitIdx=0 -> No conversion
/S/APP/UnitIdx=1 -> VarValue is multiplied by 1.8 and added to 32. (corresponds to °c_°f)
```

Unit system dependent formatting

Unit system dependent format strings can be configured as follows in Column B Text/File:

[Leading text]<unit>format0,format1,...</unit>[Trailing text]

Example:

Boiler temperature <unit>%f °C,%f °F</unit>

/S/APP/UnitIdx=0 -> Boiler temperature 80.00 °C /S/APP/UnitIdx=1 -> Boiler temperature 176.00 °F

8.4.22 VBar

The VisualBar object #VBar is a special form of the <u>#Bar</u> object and supports special displays with different color areas and pointers.

Example



Parameters

Object

<u>Column A</u>	M/O	Default	Description
#VBar	М		VisualBar object

Text/File

<u>Column B</u>	M/O	Default	Description
< <u>VBar definition</u> >.txt	М		Name of the VBar definition contains the attributes for
			displaying the #VBar object.

Font

Column C	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current font	Font for displaying the scale

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension
		ng	

Color

Column H	M/O	Default	Description
Color	0	<u>Current</u>	Scale color
		foregrou	
		nd color	

BackColor

<u>Column I</u>	M/O	Default	Description
<u>Color</u>	0	Current backgro und color	Background color

Format

see <u>#Bar</u> object

Limit1

Column L	M/O	Default	Description
Lower limit value	0	<u>VarType</u>	If a range was configured with "limit1" in the VBar definition,
		<u>-Min</u>	the value configured here is used for the range.

Limit2

Column M	M/O	Default	Description
Upper limit value	0	<u>VarType</u>	If a range was configured with "limit2" in the VBar definition,
		<u>-Max</u>	the value configured here is used for the range.

ActionLimit1, ActionLimit2

Column N,O	M/O	Default	Description
Action on upper or	0		See Limit actions
lower limit value			
overshoot			

VarValue

<u>Column P</u>	M/O	Default	Description
<variable></variable>	Μ		The configured variable in VarValue specifies the fill value in the object. The data type of this variable must be numerical. A Word or INT type array can also be defined. In this case, the first field ([0]) is used to indicate the fill value, the other fields are used to display the ranges (see <u>VBar definition</u> -> Ranges)

VarType

<u>Column Q</u>	M/O	Default	Description
BYTE	М		All numerical data types apart from LREAL can be used.
USINT			
SINT			
WORD			
UINT			
INT			
DWORD			
UDINT			
DINT			
LWORD			
LINT			
REAL			
WORD[]			
INT[]			

VarState

Column R	M/O	Default	Description
<variable></variable>	0		See <u>VarState</u> column

Option

Column S	M/O	Default	Description
Fill=Down	0	Fill=up	See <u>#Bar option</u>
Fill=Left			
Fill=Right			
Fill=Up			
Fill=x			
Fill=y			
VarStateOnOffInverte	0		Inverts the On / Off functionality of the <u>VarState</u> Variable:
d			
			VarState = 0 -> Off
			<i>VarState</i> = 1 -> On

8.4.22.1 VBar definition

The VBar worksheet contains the definitions for the <u>#VBar</u> object.

Option	Parameter1	Parameter2	Text
#Style	bar		

	bar filled		
#Range1	Number Percent [Index] Limit1 Limit2	<u>Color</u>	Text1
#Range <n></n>			
#Separator	Number	<u>Color</u>	
#Width	Number/ Percent		
#Border	Number	<u>Color</u>	
#Position	Number/ Percent	Number/ Percent	
#Values	Number Range	left right	
#Needle		Color	
#BarBackColor	<u>Color</u>		
#BarWidth	Number		

Example



#Style

Parameter 1	M/O	Default	Description
bar	0	bar	VBar is drawn with range colors. The actual value is shown with the pointer. The pointer is defined under #Needle.
bar filled	0		VBar is filled with Range colors up to the actual value. The rest of the Vbar up to the end value is deleted with the background color #BarBackColor.

#Range

The VBar object can be structured in any number of ranges (Range1..n). These ranges start with Range1 and are defined in ascending order without gaps.

Parameter 1	M/O	Default	Description
Number	0	0	The ranges can be defined as absolute with number values. The first and the last range define start (Limit1) and end (Limit2) of the VBar.
Percent	0	0	The ranges are defined by percentage values of Range1 and the last range. Range1 and the last range can not be expressed by a percentage and must be absolute. In this case, it makes sense to use Limit1 and Limit2. Caution: If percent is used, the cell must be formatted in Excel as text, as Excel will otherwise make a number out of it (e.g.: 10% is changed to 0.1). A ' can also be written in front of the percentage value.
[Index]	0	0	An array is specified under #VarValue of the VBar object, the ranges

230

			can then be defined from [1] to [n] and the ranges can be changed dynamically. [0] of the array contains the actual value. Range1 and the last range define the start and the end of the object.
Limit1 Limit2	0	0	If the value from Limit1 and Limit2 of the VBar object are to be used for a range, "Limit1" and "Limit2" can be written.

Parameter 2	M/O	Default	Description
Color	0	0	Color defines the color of the range up to the next range n+1.

Parameter 3	M/O	Default	Description
Text	0		The entered text is displayed at the position of the range, e.g. Min, Max, etc. Range texts can be defined as multilingual texts.
Format	0		Specifying a format string, e.g. %d, enables the range values to be displayed.

Parameter3 only functions in conjunction with #Values and parameter #Range.

#Separator

Parameter 1	M/O	Default	Description
<empty></empty>	0	<empty ></empty 	<empty>No separator is drawn between the ranges</empty>
Number	0	0	Width of the separator line in pixels. The separator line is displayed with the color in the Parameter2 column.

#Width

Parameter 1	M/O	Default	Description
Number	0	0	Length of the separator in pixels
Percent	0	0	Length of the separator as a percentage of DX and DY

#Border

Parameter 1	M/O	Default	Description
Number	0	0	Width of the frame in pixels. The frame is drawn with the color in the Parameter2 column.

#Position

Parameter 1	M/O	Default	Description
Number	0	0	X position of the graph in pixels relative to the object zero point (top left)
Percent	0	0	X position of the graph as a percentage of DX.

Paramete r2	M/O	Default	Description
Number	0	0	Y position of the graph in pixels relative to the object zero point (top left)

Percent	0	0	Y position of the graph as a percentage of DY.
---------	---	---	--

#Values

Paramete r1	M/O	Default	Description
<empty></empty>	0	<empty ></empty 	No range values are displayed
Number	0	0	A number defines the range for the scale. The scale is drawn with all multiples of this number up to the end of the object. e.g. 10 causes a scale of 0, 10, 20,
Range	0		If Range is specified, the scale shows all texts that were specified under #Range1, If formats were defined in the Text columns, the values of these ranges are displayed.

Paramete r2	M/O	Default	Description
Left Right	0	Left	Specifies the position of the scale. "Left" for left and top, "Right" for right and bottom

Paramete r3	M/O	Default	Description
<u>Format</u>	0	%d	Format for displaying scale values.

#Needle

Parameter 1	M/O	Default	Description
Integer	0	0	Draws a pointer with the specified width in pixels.

Parameter 2	M/O	Default	Description
<color></color>	0	Black	Color of the pointer. (only in conjunction with Parameter 1)

Text/File	M/O	Default	Description
Image	0		Draws the defined image as a pointer at the position of the current value.
<u>name</u>			Parameters 1 and 2 are irrelevant.

#BarBackColor

Background color in conjunction with #Style=bar filled.

#BarWidth

Parameter	M/O	Default	Description
1			
Integer	0	0	Width of the bargraph in pixels.

8.4.23 VMeter

The VisualMeter object #VMeter is a special form of the <u>#Meter</u> object and supports special displays with different color ranges and pointers.

Example



Parameters

Object					
Column A	M/O	Default	Description		
#VMeter	М		VisualMeter object		

Text/File

Column B	M/O	Default	Description
< <u>VMeter definition</u> >.	М		Name of the <u>VMeter definition</u> contains the attributes for
txt			displaying the #VMeter object.

Font

Column C	M/O	Default	Description
<fontname>.FNT</fontname>	0	Current	Font for displaying the scale
		font	

X, Y, DX, DY

Columns D-G	M/O	Default	Description
Integer constants Variable of type <i>INT</i>	0	<u>Autom.</u> positioni	Position and dimension
		ng	

Color

Column H	M/O	Default	Description
<u>Color</u>	0	<u>Current</u>	Color of the scale
		foregrou	
		nd color	

BackColor

Column I	M/O	Default	Description
Color	0	Current	Background color
		backgro	
		und	
		color	

Format

see <u>#Meter</u> object

Limit1

Column L	M/O	Default	Description
Lower limit value		<u>VarType</u>	If a range was configured with "limit1" in the VMeter
		<u>-Min</u>	definition, the value configured here is used for the range.

Limit2

Column M	M/O	Default	Description
Upper limit value		<u>VarType</u>	If a range was configured with "limit2" in the VMeter
		<u>-Min</u>	definition, the value configured here is used for the range.

ActionLimit1, ActionLimit2

Columns N,O	M/O	Default	Description
Action on upper or lower limit value overshoot			See Limit actions

VarValue

Column P	M/O	Default	Description
<variable></variable>			The configured variable in VarValue specifies the fill value in the object. The data type of this variable must be numerical. A Word or INT type array can also be defined. In this case, the first field ([0]) is used to indicate the fill value, the other fields are used to display the range (see <u>VMeter definition</u> -> <u>Ranges</u>)

VarType

Column Q	M/O	Default	Description
BYTE			All numerical data types apart from LREAL can be used.
USINT			
SINT			
WORD			
UINT			
INT			
DWORD			
UDINT			
DINT			
LWORD			
LINT			
REAL			
WORD[]			
INT[]			

VarState

<u>Column R</u>	M/O	Default	Description
<variable></variable>			See <u>VarState</u> column

Option

ορασπ			
Column S	M/O	Default	Description
VarStateOnOffInverte d	0		Inverts the On / Off functionality of the <u>VarState</u> Variable: VarState = 0 -> Off VarState = 1 -> On

8.4.23.1 VMeter definition

The variables and properties for displaying the <u>#VMeter</u> object are defined in the <vmeter> worksheet.

Option	Parameter1	Parameter2	Text
#Style	arc		
#Range1	Number Percent [Index] Limit1 Limit2	<u>Color</u>	Text <u>Format</u>
#Range <n></n>			
#Separator	Number	<u>Color</u>	
#Width	Number		
#Border	Number	<u>Color</u>	
#Size	Percent		
#Values	Number/Range	inside/outside	
#Needle	Number	<u>Color</u>	
#ArcBackColor	<u>Color</u>		
#ArcWidth	Number		
#Background	Image name		

#Style

Param eter1	M/ O	Def ault	Description
arc	0	arc	VMeter is drawn with range colors. The actual value is shown with the pointer. The pointer is defined under #Needle.
arc filled	0		VMeter is filled with Range colors up to the actual value. The rest of the VMeter up to the end value is deleted with the background color #ArcBackColor.

#Range

Range1 to N define ranges of the *#VMeter* with different colors. Any number of ranges can be defined. These ranges can either be defined by a number, a percentage value of the range defined by Limit1/2, a variable or a limit. Range1 and the last range define the start and the end of the object. Parameter2 is the <u>color</u> of the corresponding range.

If #Values equals Range, the texts of the Text/File column are output. The options of the Format column can be used to format these texts. This text is language-dependent, i.e. an additional column appears in the definition file for each language defined. The text is loaded when the language is changed. If a number was configured under #Values, the number values are output. This is described further under <u>#Values</u>.

Ranges defined by arrays

If an array is specified under VarValue, all array elements starting at [1] can be assigned for the ranges. These must be configured in square brackets in the definition file.

The value[0] is the actual value.

Using Limit1/2 as a range

Limit1 and Limit2 as range values take on the value of Limit1 and Limit2 of the object (column L/M). This can be used in conjunction with percentage values.

Using constant number as range

Constant numbers define absolute range limits.

#Separator

Parameter1	Parameter2	Text/ File	Description
Integer	<u>Color</u>	-	The <i>#Separator</i> is the marking of the scale and is defined by an integer which specifies the width of this mark in pixels and its color.

#Width

Parameter 1	Parameter2	Text/ File	Description
Integer	-	-	Specifies the length of the #Separator in pixels.
Percentage value	-	-	Specifies the length of the #Separator as a percentage of DX.

#Border

Parameter 1	Parameter2	Text/ File	Description
Integer	<u>Color</u>	-	Specifies the thickness of the border and its color.

#Size

Parameter	Parameter	Text/	Description
1	2	File	
Percent	-	-	Specifies the length of the VMeter as a percentage of DX If percent is used, the cell must be formatted in Excel as text, as Excel will otherwise make a number out of it (e.g.: 10% is changed to 0.1). A ' can also be written in front of the percentage value.

#ArcBackColor

Background color in conjunction with #Style=arc filled.

#ArcWidth

Specifies the width of the arc in pixels.

#Size

Size defines the size of the arc in relation to the object size. Size must be less than 100% if the pointer is to extend outside of the arc.

#Values

This parameter is responsible for the position and type of the scale. The Parameter 2 inside/outside defines whether the scale values/texts are to be drawn inside or outside the VMeter.

Parameter 1	Parameter 2	Text/ File	Description
		-	No range values are drawn if the Parameter 1 is not specified.
Range	< "inside" "outside" >	-	Range displays the scale with the range text or value. The Range texts can be defined as multilingual. If a <u>Format</u> is specified as Range text, the range value is displayed.
Number	< "inside" "outside" >	<u>Format</u>	Number displays a scale with all multiples of this number up to the end of the object, e.g. 10 and ranges -10 to 20. The scale would then have the following values: {-10, 0, 10, 20}. Format defines the formatting of the scale values.

#Needle

Parameter 1	Parameter2	Text/ File	Description
	-	-	If a parameter is not specified, the object is filled in exactly the same ways as if the <u>#Style</u> is "Arc filled".
Integer	<u>Color</u>	-	A rectangle with this width is drawn as a pointer
-	-	Image file	If an image file is specified for the pointer, this must be drawn with position 180°, i.e. the pointer points to the left, the rotation point is on the right.

#Background

If a background image is defined, only the pointer is displayed with the actual value on this background image. The background image can be defined as language-dependent.



9 Quick start

This chapter describes how to create a small project from A to Z

- 1. Opening a new project
- 2. Defining screen pages and objects
- 3. Definition of object properties
- 4. Simulating the application on the development PC
- 5. Variable import
- 6. Compiling the project and loading it onto the target system

9.1 Opening a new project

Launch EXCEL and create a new EPAM4 project with Project - New.

C)	Mappel - Microsoft Excel										23	
	Start Einfügen	Seitenlayout	Formeln	Daten	Überprüfen	Ansicht	Entwicklertoc	Add-Ins	EPAM4	-		x
AR .	× •		R	2								
New	Settings Commu	inication Scale	Convert	Manu	ial About							
	Pro	oject			Help							

Enter the name of the project, e.g. "Quickstart", name of the first screen page, e.g. "start", name of the developer as well as the directory, and select the target system.

Create project	X
<u>N</u> ame:	Quickstart
<u>S</u> tartpage:	start
Programmer:	Hans Muster
Pat <u>h</u> :	D:\EPAM4\Projekte\Quickstart
Version:	0 1 0 0 Auto increment
<u>T</u> arget device:	EP-37x-10 -

EPAM then creates an Excel file with the appropriate name, e.g. Quickstart.xls, in the corresponding directory. An Init page and the Start page are defined in the project, as well as the required <u>EPAM worksheets</u>.

9.2 Defining screen pages and objects

You now have two objects **#Page=Init** and **#Page=Start** in your EXCEL sheet. The cursor is positioned in the next empty row.



Here you can double-click the appropriate objects in the toolbox (*Objects*) such as *Button*, *Variable*, etc. in order to define further objects for the Start screen page. In order to design another screen page, define a new page, such as "Page2" by adding a *Page container object after the last object or possibly after a blank row (for greater clarity)*.

In order to design a screen page change from **#Page=start** to **#Page=Page2** and vice versa, add a *Button* to each page and specify **#Page=Page2** and **#Page=start** as the *Action*.



9.3 Defining object properties

The object properties can be changed in the columns via the <u>context menu</u> (right mouse button). The <u>Page Designer</u> can be used for the graphical positioning of the objects. To do this, the required page must be selected beforehand by clicking a cell in the page. The selected page is then shown and the objects can be moved or resized with the mouse or cursor keys.

9.4 Simulating the application on the development PC

The <u>Start Simulation</u> function enables the simulation tool to be started at any time on Windows in order to test the application. The application can be operated with the mouse. If the PLC option is active, communication to the PLC is also activated. (this function depends on the communication drivers selected)

W Quickstart.txt	
Startseite	
Seite2	

Clicking the "Page2" button activates the #Page=Page2:

Quickstart.txt	
Startseite	Seite2

Clicking the "StartPage" button activates the #Page=Start:

9.5 Importing variables

Choose the <u>"Project / Communication"</u> menu to select the appropriate communication driver, e.g. PLCH (Codesys-PLC handler). Edit is then used to define a controller, e.g. PLC The "*Import Symbol file*" menu can be used to read in the Codesys symbol file (SYM/XML).



The Open function is used to import the variables into the <u>UserVar</u> worksheet and it is then possible to select them in the VarValue column, for example, and assign them to an object via the <u>context</u> <u>menu</u>.



9.6 Compiling the project and loading onto the target system

The project is then compiled and tested via <u>Start - Build</u>. The <u>Download settings</u> dialog then appears. You can then load the project into a local directory or onto the target system (Target, default settings) via FTP.

Download settings				
FTP Local	directory			
Username:	User	Download <u>R</u> ecipe	Delete D <u>a</u> talog	
Password:	*******	Download Project Source	Delete Recipe	
IP-Address:	192.168.0.99	Download <u>F</u> onts	Delete I <u>N</u> I-Files	
Target-Path:	\StorageCard\EPAM4			
	at the set connection			
Build all bef <u>o</u> re download				
Q Download ✓ Ok X Cancel				

In order to carry out the FTP download, you must enter the IP address of the target system as well as the user name and password. Click Download in order to start the download. Once the download has been successfully completed, the EPAM application starts up automatically with the new project. You should load the PLC project onto the target system beforehand, in order to ensure that communication with the PLC is functioning, and that the variables defined in EPAM can be read by the PLC.

The FTP server on the target system must be configured accordingly via User/Password. (see also WindowsCE system description). This can be checked with the Test connection button.

If you cannot establish a connection to the target system, check your network settings. The PC of the development system must have an IP address and this must be in the same subnet as the target system (first 3 numbers of the IP address identical, last number different!).

Check the network connection with the following command in the command line: **Ping xxx. xxx.xxx** (xxx = IP address of the target system).



10 HowTo

FAQs:

How can date/time be displayed or entered in the AM/PM format?

10.1 AM/PM time system

Use the <u>#Variable</u> object to display a <u>DT</u> variable in the 12-hour time system

See <u>#Variable format</u> for the <u>DT</u> type.

Example:

%[HH: 02:00:00 -> 02:00:00 AM MM:SS 14:00:00 -> 02:00:00 PM P]DT %[HH: 02:00:00 -> 02:00:00 am MM:SS 14:00:00 -> 02:00:00 pm p]DT

Set or display the system time in the 12-hour time system

The following system variables are relevant for the hours time system:

Variable	Data type	Read/ Write	Description
/ <u>S/APP/</u> <u>Tm_UseAm</u> <u>Pm</u>	BOO L	R/W	0 -> 24-hour time system (0-23) 1 -> 12-hour time system (1-12) This variable has direct affect to time formats: If 1 then %[HH:MM:SS]DT is converted to %[HH:MM:SS P]DT
<u>/S/SYS/</u> <u>Tm_Hour</u>	WO RD	R/W	The hours of the actual or set system time in 12 or 24-hour time system
<u>/S/SYS/</u> <u>Tm_HourMa</u> <u>X</u>		R	Contains the highest hour of the actual hour time system. 12-hour time system: 12 24-hour time system: 23
<u>/S/SYS/</u> <u>Tm_IsPm</u>	BOO L	R/W	Indicates AM/PM: 0 -> AM 1 -> PM

Example:

In order to switch to the 12-hour time system:

• Set /S/APP/Tm_UseAmPm to 1

In order to switch the time in the 12-hour system to 15:00

- Set /S/SYS/Tm_IsPm to 1
- Set /S/SYS/Tm_Hour to 3

10.2 Alarm simulation

The PLC isn't available yet. How can I set alarms to simulate/test the alarm handling?

On can simulate respectively set individual alarms by directly writing into the "alarmbuffer". Use a *#Button* or *#Variable* -Object and define an element of the alarmbuffer as *VarValue*. E.g.: /PlcH/Plc1/Alarmbuffer[4]

Typically this works only if the communication to the PLC is disabled.



11 Runtime errors

System messages

System messages are caused by special events. The system messages are logged in a logbook. The logbook can be displayed with the <u>#LogView</u> object.

Stru	cture
------	-------

Catalog ue	System messages are combined in different catalogues (e.g. groups).			
Class	Each message is assigned one of the following classes:			
	Clas s	Description	Explanation	
	Fatal	Fatal error RTS must be shut down. Indicated by a dialog.	For example, a resource is missing that the RTS relies on.	
	Error	Error RTS does not have to be shut down in all cases. Is displayed via a dialog.	e.g. syntax error in the project. The RTS can continue running, but this usually does not make sense in most cases.	
	Warn ing	Warning RTS continues to run. Not indicated by a dialog.	e.g. variable could not be read.	
	Info	Information RTS running normally Not indicated by a dialog.	Information messages such as Start/Stop of RTS.	
ld	Number of the message			
Time	Date/ti	me of message.		
stamp				
Text	Message text with parameters			

Catalogues

- <u>Project</u>
- VarPool
- <u>Trend</u>
- <u>Recipe</u>
- SysAdapter
- PrgOption
- <u>Authent</u>

Project catalogue

This catalogue contains messages that generally refer to the project files. Normally they indicate file

No	Clas s	Text	Description
0	Error	file ' <filepath>' failed to open</filepath>	The file <filepath> could not be opened. <u>Cause:</u> Faulty project.</filepath>
1	Error	file ' <filepath>' failed to write</filepath>	The file <filepath> could not be written. <u>Cause:</u> Path does not exist or medium is write protected. <u>Solution:</u> Adjust path.</filepath>
2	Error	<pre>in file '<filepath>' line '<number>' incomplete</number></filepath></pre>	The line <number> in file <filepath> is not complete. Cause: Incorrect or damaged project file. Solution: Recompile project.</filepath></number>
3	Error	language file ' <filepath>' in line '<number>' inconsistent</number></filepath>	The language file does not match the project file. The error is at line <number> in language file <filepath>. <u>Cause:</u> <u>Solution:</u></filepath></number>
4	Error	<pre>in file '<filepath>' line '<number>' undefined action <text></text></number></filepath></pre>	Action <text> on line <number> in file <filepath> is undefined. Cause: Configuration error. Solution: Correct configuration:</filepath></number></text>
5	Error	<pre>in file '<filepath>' line '<number>' undefined limit action '<text>'</text></number></filepath></pre>	<i>Limit action</i> (1/2) <text> on line <number> in file <filepath> is undefined. Configuration error. Solution: Correct configuration:</filepath></number></text>
6	Error	in file ' <filepath>' section '<text>' not found</text></filepath>	Section <text> in the file <filepath> not found. Section stands for <i>#page=<name></name></i>, <i>#Group=<name></name></i>, <i>#scrollist=<name></name></i>. <u>Cause:</u> Configuration error.</filepath></text>

and line number.

			Solution: Correct configuration:
7	Error	<pre>in file '<filepath>' line '<number>' invalid library</number></filepath></pre>	The library definition <text> in file <filepath> on line <number> is invalid.</number></filepath></text>
		definition ' <text>'</text>	<u>Cause:</u> Configuration error.
			Solution: Correct configuration:
8	Error	<pre>in file '<filepath>' line '<number>' invalid library path</number></filepath></pre>	The library path <path> in file <filepath> on line <number> is incorrect.</number></filepath></path>
		' <path>'</path>	<u>Cause:</u> Configuration error.
			Solution: Correct configuration:
9	Error	in file ' <filepath>' line '<number>' undefined variable type</number></filepath>	In file <filepath> on line <number> invalid data type <text>.</text></number></filepath>
		' <text>'</text>	<u>Cause:</u> Configuration error.
			Solution: Correct configuration:
10	Error	in file ' <filepath>' line '<number>' invalid com-driver</number></filepath>	In file <filepath> on line <number> invalid communication driver parameters <text>.</text></number></filepath>
		parameters <text></text>	<u>Cause:</u> Configuration error.
			Solution: Correct configuration:
11	Error	in file ' <filepath>' line '<number>' invalid variable</number></filepath>	In file <filepath> on line <number> variable definition <text> is invalid.</text></number></filepath>
		definition: ' <text>'</text>	<u>Cause:</u> Configuration error.
			Solution: Correct configuration:
12	Error	<pre>in file '<filepath>' line '<number>' undefined com-driver name</number></filepath></pre>	In file <filepath> on line <number> undefined communication driver name <text>.</text></number></filepath>
		' <text>'</text>	<u>Cause:</u> Configuration error.
			Solution: Correct configuration:
			1
---------	-------	--	---
13	Error	<pre>in file '<filepath>' line '<number>' undefined host name</number></filepath></pre>	In file <filepath> on line <number> undefined host name <text>.</text></number></filepath>
		' <text>'</text>	Cause: Configuration error.
			Solution: Correct configuration:
14	Error	<pre>in file '<filepath>' line '<number>' failed to register</number></filepath></pre>	In file <filepath> on line <number> Variable could not be registered.</number></filepath>
		variable ' <text>'</text>	<u>Cause:</u> Configuration error.
			Solution: Correct configuration:
15	Error	<pre>in file '<filepath>' line '<number>' variable '<name>' type '<type>' conflict</type></name></number></filepath></pre>	In file <filepath> on line <number> The data type <type> does not match the data type of the variable <name>.</name></type></number></filepath>
			Cause: Configuration error.
			<u>Solution:</u> Correct configuration:
16	Error	<pre>in file '<filepath>' line '<number>' type '<type>' of variable '<name>' not supported</name></type></number></filepath></pre>	In file <filepath> on line <number> The data type <type> of the variable <name> is not supported.</name></type></number></filepath>
			Cause: Configuration error.
			<u>Solution:</u> Correct configuration:
17	Error	in file ' <filepath>' line '<number>' bad action argument</number></filepath>	In file <filepath> on line <number> Invalid argument in action <text></text></number></filepath>
		' <text>'</text>	Cause: Configuration error.
			Solution: Correct configuration:
18	Error	<pre>in file '<filepath>' line '<number>' undefined option '<text>'</text></number></filepath></pre>	In file <filepath> on line <number> Invalid option <text>.</text></number></filepath>
			Cause: Configuration error.
			Solution: Correct configuration:

19	Error	<pre>in file '<filepath>' line '<number> undefined font '<text>'</text></number></filepath></pre>	In file <filepath> on line <number> Undefined font <text></text></number></filepath>
20	Error	<pre>in file '<filepath>' line '<number>' unrecognized syntax '<text>'</text></number></filepath></pre>	In file <filepath> on line <number> Invalid syntax Cause: Configuration error. Solution: Correct configuration:</number></filepath>
21	Error	in file ' <filepath>' line '<number>' action '%3' failed</number></filepath>	In file <filepath> on line <number> The action <text> has failed Cause: It depends on the relevant action. For example, the action system=<cmd> may have failed because the stated path is not correct.</cmd></text></number></filepath>
22	Error	in file ' <filepath>' line '<number>' error in description %3 '%4'</number></filepath>	Solution: Adjust configuration or environment. In file <filepath> on line <number> Error in description <description> '<text>' Cause: Configuration error. Solution: Correct configuration:</text></description></number></filepath>
23	Info	start project ' <filename>'</filename>	Start of the RTS with project file <filename></filename>

VarPool catalogue This catalogue contains messages that refer directly to variables, types and communication.

N 0.	Class	Text	Description
0	Error	type <type1> conflicts '<type2>' with type for variable '<name>'</name></type2></type1>	This message is only for internal use.
1	Error	unable to load driver ' <name>': '<text>'</text></name>	The communication driver <name> could not be loaded. Extended error message displayed in <text>. Cause: RTS is not correctly installed. Solution: Execute installation.</text></name>
2	Error	driver ' <name>' is incompatible</name>	The communication driver <name> is not compatible with the RTS.</name>

_	1		
			<u>Cause:</u> RTS is not correctly installed.
			Execute installation.
3	Warni ng	Channel '/ <driver>/<host>' disturbed: '<text>'</text></host></driver>	The communication channel / <driver>/<host> is faulty. An extended error message is displayed in <text>.</text></host></driver>
			Cause: RTS is not correctly installed.
			<u>Solution:</u> Execute installation.
4	Info	Channel '/ <driver>/<host>' connected</host></driver>	The communication channel / <driver>/<host> was successfully connected.</host></driver>
5	Warni ng	Variable ' <name>' read error '<text>'</text></name>	The variable <name> can not be read. Extended error message displayed in <text> {addresserror typeconflict}</text></name>
			<u>Cause:</u> Variable does not exist in the PLC or has a different data type.
			<u>Solution:</u> Adjust EPAM or PLC project.
6	Info	Variable ' <name>' read ok</name>	The variable <name> was read successfully.</name>
			<u>Cause:</u> Variable could be read after it previously could not be read.
7	Error	Variable ' <name>' write error</name>	The variable <name> can not be written.</name>
			<u>Cause:</u> Variable does not exist in the PLC or has a different data type.
			<u>Solution:</u> Adjust EPAM or PLC project.
8	Warni ng	Variable ' <name>' write ok</name>	The variable <name> was written successfully.</name>
			<u>Cause</u> : Variable could be written after it previously could not be written.

Trend catalogue

This catalogue contains messages that refer directly to a <u>#Trend</u> object

N Class Text	Description
--------------	-------------

EPAM4-Manual

о.			
0	Error	Trend <name>: undefined Datalog</name>	Trend <name>: <i>Datalog</i> <text> not defined.</text></name>
			<u>Cause:</u> Configuration error.
			<u>Solution:</u> Correct configuration:
1	Error	Trend <name>: Y range of curve '<text>' is invalid</text></name>	Trend <name>: The Y axis of the curve <text> is invalid.</text></name>
			<u>Cause:</u> Configuration error.
			<u>Solution:</u> Correct configuration:
2	Error	Trend <name>: X range is</name>	Trend <name>: X axis is invalid</name>
			Cause: Configuration error.
			Solution: Correct configuration:

SysAdapter catalogue

This catalogue contains messages that refer directly to the SysAdapter. The SysAdapter (normally *SysAdapter.dll*) is an RTC component in which platform-specific functions are implemented.

N 0.	Class	Text	Description
0	Fatal	sysplug ' <filepath>' load error: '<text>'</text></filepath>	SysPlug <filepath> could not be loaded. Extended error message in <text></text></filepath>
			<u>Cause:</u> The installation of the RTS is faulty.
			<u>Solution:</u> Repeat the installation.
1	Fatal	failed to initialize the touch device	The touch device could not be initialized.

Recipe catalogue

This catalogue contains messages that refer directly to a <u>#Recipe</u> object

N 0.	Class	Text	Description
0	Error	Couldn't load recipe ' <filepath>': XML error: '<text>'</text></filepath>	Recipe file <filepath> could not be loaded: The error <text> occurred when parsing the XML file. Cause: Damaged file or invalid XML file.</text></filepath>

256

_	1		
			<u>Solution:</u> Remove file.
1	Error	Couldn't load recipe ' <filepath>': Recipe type '%2' doesn't match</filepath>	Recipe file <filepath> could not be loaded: The recipe type <type> does not match. Cause: The file may have been copied to the target by hand.</type></filepath>
			Remove file.
2	Error	Couldn't load recipe ' <filepath>': Variable count '<number>' doesn't match</number></filepath>	Recipe file <filepath> could not be loaded: Number <number> of variables does not match.</number></filepath>
			<u>Cause:</u> The recipe may have been changed, variables added or removed.
			Solution: The error dialog provides 3 options.
			[Ignore] The recipe file is loaded anyway (possibly incomplete).
			[Delete] The recipe file is not loaded and is deleted.
			[Cancel] The recipe file is not deleted.
3	Error	Couldn't load recipe ' <filepath>': Type '<type>' for variable '<name>' not supported</name></type></filepath>	Recipe file <filepath> could not be loaded: The data type <type> for variable <name> is not supported.</name></type></filepath>
			Cause: Configuration error: Arrays, for example, are not supported.
			<u>Solution:</u> Correct configuration.
4	Error	Couldn't load recipe ' <filepath>': Type conflict for '<name>', expected '<type1>' found</type1></name></filepath>	Recipe file <filepath> could not be loaded: Type conflict variable <name>, <type1> expected, <type2> found.</type2></type1></name></filepath>
		' <type2>'</type2>	<u>Cause:</u> The recipe was changed, perhaps the recipe file is obsolete.
			Solution: The error dialog provides 3 options.
			[Ignore] The recipe file is loaded anyway (possibly

			incomplete)
			[Delete]
			The recipe file is not loaded and is deleted.
			[Cancel] The recipe file is not deleted
			The recipe life is not deleted.
5	Error	Couldn't load recipe	Recipe file <filepath> could not be loaded:</filepath>
		<pre>'<filepath>':</filepath></pre>	Variable <name> is unknown.</name>
		Variable ' <name>' is unknown</name>	
			Cause:
			Obsolete recipe.
			Solution:
			The error dialog provides 3 options.
			[lgnore]
			The recipe file is loaded anyway (incomplete).
			[Delete]
			The recipe file is not loaded and is deleted.
			[Cancel]
			The recipe file is not deleted.
6	Error	Couldn't load recipe	Recipe file <filepath> could not be loaded:</filepath>
		<pre>'<filepath>':</filepath></pre>	Project name <name> does not match the</name>
		Project name ' <name>' doesn't</name>	project.
		match	
			Cause: The recipe file comes from a different project
			Solution:
			Remove recipe file.
-	_		Emperado en accidio en Alconomicale los estates en aires
ľ	Error	Recipe ' <type>' download error</type>	Error when writing the variables of the recipe
			Variable <name> could not be written</name>
			Cause:
			The variable <name> does not exist in the</name>
			PLU
			Solution:
			Adjust EPAM or PLC project.
8	Error	Recipe ' <type>' upload error at</type>	Error when reading the variables of the recipe
		variable ' <name>'</name>	from the PLC:
			variable <name> could not be read.</name>
			Cause:
			The variable <name> does not exist in the</name>
			PLC
			O a lusti a su
			Solution:

<u> </u>	1		
			Adjust EPAM or PLC project.
9	Error	Invalid recipe definition file	Invalid recipe definition file <filepath>. Error in</filepath>
		<pre>'<filepath>'.</filepath></pre>	line <number>.</number>
		Error in line ' <number>'</number>	
			<u>Cause:</u>
			File is damaged.
			Solution:
			Execute new Build.
10	Info	Recipe ' <type>' file 'filepath'</type>	File <filepath> of the recipe <type> was</type></filepath>
		loaded	successfully loaded.
11	Warni	Recipe ' <type>' incompatible</type>	The incompatible file <filepath> of the recipe</filepath>
	ng	file ' <filepath>' loaded</filepath>	<type> was loaded.</type>
	Ū		This message is a consequence of the
			Acknowledgement dialog with [Ignore]
			message 2, 4 and 5
12			

PrgOption catalogue This catalogue contains messages that refer directly to the RTS parameters (Command line, EPAM. INI).

N 0.	Class	Text	Description
0	Fatal	invalid command line argument syntax: ' <text>'</text>	The syntax of the Parameters command lines <text> is invalid.</text>
1	Fatal	Inifile ' <filepath>' not found</filepath>	The Ini file <filepath> does not exist.</filepath>
2	Fatal	PATH_RAM parameter '%1' invalid	The RAM_PATH in EPAM.INI is invalid.
			<u>Cause:</u> The path is incorrectly configured. The absolute path must be specified. <u>Solution:</u>

Authent catalogue

Ν	Class	Text	Description
о.			
0	Info	user ' <name>' logged in"</name>	The user <name> has logged in.</name>
1	Warni	login ' <name>' failed</name>	The user <name> could not log in.</name>
	ng		
			Cause:
			- Incorrect password
			- Account disabled
2	Info	user ' <name>' logged out</name>	The user <name> has logged out.</name>
3	Info	user ' <name>' has changed his</name>	The user <name> has changed his password.</name>
		password	
4	Warni	changing password for ' <name>'</name>	Changing the password for <name> failed</name>
	ng	failed with error# ' <number>'</number>	with error# <number></number>



12 Glossary

ADAM

Active Directory Application Mode (LDAP Server)

ADAM is a licensed component of the Windows 2003 R2 edition. It cannot be purchased separately. It can be downloaded from Microsoft's website and installed on Windows XP and Windows 2003 servers.

CoDeSys

3S Soft PLC

Data source

A device from/to which process data can be read and/or written.

EPAM3

Easy Page Machine Version 3

EPAM4

Easy Page Machine Version 4

EXCEL

Microsoft Office Excel

ΗМΙ

Human Machine Interface

IDE

Integrated Development Environment

Communication driver

Implements the communication of variables between EPAM and a data source, e.g. PLC

Communication channel

Communication between EPAM and a data source.

LDAP

The Lightweight Directory Access Protocol (LDAP) is an application protocol from network technology. It enables the polling and modification of the information of a directory service (a database hierarchically distributed in the network) via an IP network.

ММІ

Man Machine Interface

PLC

Programmable Logic Controller

Qt

Application and UI framework (Nokia)

RTS

RunTime System

PLC

Programmable logic controller

Target

Target system

TwinCat

Beckhoff Soft PLC



13 Support

Current versions and hotfixes can be obtained from www.easypagemachine.com



14 Version history

Version	Date / Signed	Modifications
1.0.0	27.2.2012 / Fis	First edition
1.0.1	30.5.2012 / nh	New Border=RoundR
1.0.2	05.06.2012 / nh	Unit system conversion
1.0.3	14.06.2012 / nh	New communication ADS
1.0.4	20.09.2012 / nh	#PageHome neu PageHome
		PIcH support ElauMax4
1.0.5	17.10.2012 / nh	new #variable option select
1.0.6	26.10.2012 / nh	several minor changes
1.0.7	07.11.2012 / nh	 New system variable /S/APP/BacklightDim
		New Format <i>fill=gradient</i>
		Animated page change
		 New authentication objects <u>#Authent, #RoleList, #UserList</u>
1.1.0	04.01.2013 / nh	New option VarStateOnOffInverted
1.1.1	07.01.2013 / nh	New worksheet StyleSheet
1.1.2	29.01.2013 / nh	New actions for <u>#Page</u> with gestures
1.1.3	05.03.2013 / nh	 New #Button option: <u>ActionOnVarValueUpdate</u>
		• New #Button action: <u>EjectVolum</u>
		New #RemoteControl Action: <u>OnError:Close=<name></name></u>
		New \$Scrollist option: <u>VarValuToScrollX</u>
		New \$Scrollist option: <u>FixedSize</u> New \$Scrollist option: <u>Vertical/Bibbank avout</u>
		New \$Scrollist option: <u>VerticalRibbonLayout</u> New \$Scrollist option: <u>HorizontalRibbonLayout</u>
		New option VPos={ton ¹ bottom}
		 New #Recipe Action imit2: #page=<name></name>
		• New #Button Action recipe:load= <filepath></filepath>
1.1.4	11.03.2013 / nh	New parameter PDU-MaxSize in Rs7Hosts
1.1.5	09.08.2013 / nh	New datatype DATE
		• New object #Calendar
		New object #Scrollist2
		New object <u>#Slider</u>
		 New IDE function <u>scale project</u>
		 New UserColor dialog with pipette tool
		• <u>#DataLog</u> : Variables with "Group"-parameters
		New system variables:
		/S/APP/RecipeList:FileFilter
		<u>/S/APP/RecipeList:NameFilter</u>
		New #Trend option cursor=off
		New \$Scrollist ontions:
		VerticalScrollBarAlwaysOn
		HorizontalScrollBarAlwaysOn
		#Recipe: Second optional action
1.1.6	30.08.12 /nh	#Signal: supports STRING/WSTRING
		• #AlarmList: new option AlarmType= <type></type>
		Duration of page-animation adjustable
		• #Trend: y min/max with variable
		IDE licensing
		New Limit Action <u>Alarm:set=<no></no></u>
1.1.7	04.09.13 / nh	#TextList: Filename with HTML-anchor

1.1.8	17.09.13 / nh	 #Alarm new property <u>class</u> { Error, Warning} New system variable <u>Drv[<driver>][<host>].LastError</host></driver></u> #Signal: new Option DisabledPaint=Off
1.1.9	24.09.13 / nh	<u>#Datalog-Definition</u> : #Export
1.1.10	09.01.14 / nh	 <u>#Trend</u>: Neue Option datalog=<name></name> <u>Trend-Definition</u>: #GridY may be specified as a factor
1.1.11	14.02.14 / nh	• <u>#Datalog</u> : Placeholder < <i>type</i> > for # <i>Export</i>
1.1.12	06.03.14 / nh	 New system variable <u>/S/SYS/Edit_val_i</u> New communication driver <u>MI/F</u>
1.1.13	15.04.14 / nh	• <u>#Trend</u> : Option datalog= <name> supports index variables</name>
1.1.14	12.05.14 / nh	 New feature: project - <u>archive</u> Switch off the <i>Busy-Cursor</i> cursor in <u>Target Settings</u> Device-name as default <u>Codesys-adr</u>
1.1.15		New target setting <u>TapAndHold timeout [ms]</u>

Version:1.1.15Date:04.09.2014

Grossenbacher Systeme AG Spinnereistrasse 10 CH-9008 St. Gallen Switzerland

 Tel:
 +41 (0)71 243 29 29

 Fax:
 +41 (0)71 243 29 28

 Email:
 display@gesys.ch

 Web:
 www.gesys.ch

Index

- # -

#aarrggbb 77, 94 75, 120, 152 #Alarm #Alarmlist 75, 143, 152 #ArcBackColor 235 #ArcWidth 235 #Authent 75, 125, 197, 215 #AutoExport 131 #Background 235 #Bar 75, 149 #BarBackColor 229 #BarWidth 229 #Border 229, 235 #BusyCursor 131 #Button 75, 152 #Calendar 166 #Color 214 #Column 147, 217 #Control 131 #Cursorcolor 214 75, 130, 152, 214 #Datalog #DataLogCol 214 #DiagSig 75, 170 #DropDownList 75, 172 #DT 131 131 #Export #File 131 #Flow 214 #Format_date 214 #Format time 214 #Gap 214 #Grid 214 #Grid:Color 147, 217 #Grid:hide 147, 217 #GridX 214 #GridY 214 #Group 75, 111, 118 #Header 131 #Header:BackColor 147, 217 #Header:Color 147, 217 #Header:Font 147, 217 #Header:Height 147, 217 #InterfaceType 129 #InterfaceType : file 129 #LogFileFormat 131 #LogView 75, 176, 250

#Max 214 #Message 32, 75, 178 #Meter 32, 75, 181 #Min 214 #Needle 229, 235 20, 75, 113 #Page #Page=<name> 20, 43, 80, 113, 120, 134, 136, 152, 170, 191, 194, 218, 240 #Page=<name>:animation={topin!bottomin!leftin!right in} 113 #Page=Init 119, 240 #PageHome 20 #PagePrev 20 #Password 75, 134, 152 #PenWidth 214 #Position 229 #RadioButton 75, 191 #Range 214 229, 235 #Range1 #RangeN 235 #Recipe 75, 136, 152 #RecipeList 75, 152, 187 #RemoteControl 43, 75, 194 #RoleList 197 #Row:Height 147, 217 #Row:Lines 147, 217 #rrggbb 77.94 #Scale 214 #ScaleColor 214 #ScaleX 214 #ScreenSaver 75. 140 #Scrollist 33. 75. 116 #Scrollist=<name> 116 #Scrollist2 118 #Scrollist2=<name> 118 #Separator 131, 229, 235 #Signal 75, 199 #Size 131, 235 229, 235 #Style #Switch 75, 206 #Sys2PLC 75, 142 #TextList 75, 209 #TimeFormat 131 #TimeStamp 131 214 #Title 75, 152, 212 #Trend #UserList 215 #Values 229. 235 #Variable 43, 75, 218 #VBar 75, 227 #VMeter 75, 232 #widget 92

#Width 229, 235 #Xscalebgcolor 214 #Xscalefgcolor 214 #XZoomMax 214 #Y 214

- \$ -

\$Group 75 \$Group definition 106 \$Group=<name> 106 \$Scrollist 75 \$Scrollist=<name> 108 \$Scrollist2=<name> 109 \$Scrollist2-Definition 109

- % -

%[<printout>]DT 218 %[<printout>]T 218 %[d.m.Y H:M:S]DT 218 %[Sign][IntegerDigits].[Decimalplaces][Type] 218

- & -

& 79, 152

- / -

/S/APP/Alarm:Type 25, 42, 143, 152 /S/APP/AlarmList:Type 42 /S/APP/Backlight 25 /S/APP/BacklightDim 140 /S/APP/Language 25.42 /S/APP/NoBeep 42 /S/APP/Password <level> 25, 42, 134 /S/APP/Recipe:Path 25, 42 25, 42, 152, 187 /S/APP/Recipe:type /S/APP/Recipe[<type>].file 25, 42, 139, 152 /S/APP/Recipe[<type>].name 25, 42, 139, 152 /S/APP/Recipe type 187 /S/APP/RecipeList:FileFilter 187 /S/APP/RecipeList:NameFilter 187 /S/APP/Tm UseAmPm 25, 42, 152, 247 /S/APP/UnitIdx 25, 225 /S/APP/User_<level> 25, 42, 134 /S/SYS/Alarm[<name>].Active 25, 43 /S/SYS/Alarm[<name>].ActiveCount 25, 43 /S/SYS/AlarmList[<name>].INFO 25, 43, 143 /S/SYS/AlarmList[<name>].NR 25, 43, 143

/S/SYS/AlarmList[<name>].TEXT 25, 43, 143 /S/SYS/AlarmList[<name>].TIN 25, 43, 143 /S/SYS/AlarmList[<name>].TIN_DT 25, 43, 143 /S/SYS/AlarmList[<name>].TOUT 25, 43, 143 /S/SYS/AlarmList[<name>].TOUT_DT 25, 43, 143 /S/SYS/AlarmList[<name>].TQUIT 25, 43, 143 /S/SYS/AlarmList[<name>].TQUIT_DT 25, 43, 143 /S/SYS/AlarmList[<name>].TXTINFO 25. 43. 143 /S/SYS/Authent:Pwd 43 /S/SYS/Authent:User 43 /S/SYS/Backlight 43 /S/SYS/DateTime 25, 31, 43 /S/SYS/Drv[<driver>][<host>].state 43 /S/SYS/Edit val 25, 218 /S/SYS/Ethernet[0].DhcpMode 25, 43, 152 /S/SYS/Ethernet[0].Dns1lpAdr 25, 43, 152 /S/SYS/Ethernet[0].Dns2lpAdr 25, 43, 152 /S/SYS/Ethernet[0].GatewaylpAdr 25, 43, 152 /S/SYS/Ethernet[0].lpAdr 25, 43, 152 /S/SYS/Ethernet[0].MacAdr 43 /S/SYS/Ethernet[0].SubnetMask 25, 43, 152 25, 43, 218 /S/SYS/HelpText /S/SYS/IrTouch 25, 43 /S/SYS/Limit1 25, 43, 218 /S/SYS/Limit2 25, 43, 218 /S/SYS/NewPage 25, 43, 113 /S/SYS/Pageld 25, 43, 113 /S/SYS/PageldLast 25, 43, 113 /S/SYS/PageName 25.43.113 /S/SYS/ProjectName 25, 43 /S/SYS/ProjectProgrammer 25, 43 /S/SYS/ProjectTarget 25, 43 /S/SYS/ProjectVersion 25, 43 /S/SYS/Pwd 129 /S/SYS/Pwl 25, 43, 134, 152 /S/SYS/PwlRequired 25, 43 /S/SYS/Rc_Password 25, 43, 194 /S/SYS/RcInput_enabled 43, 194 /S/SYS/RemoteClient.connected 25, 43, 194 /S/SYS/tm_Day 25, 43, 152 /S/SYS/Tm Hour 25, 43, 152, 247 /S/SYS/Tm_HourMax 25, 43, 247 /S/SYS/Tm IsPm 25, 43, 152, 247 25, 43, 152 /S/SYS/tm_Min /S/SYS/tm_Mon 25, 43, 152 /S/SYS/tm nSec 25, 43, 152 /S/SYS/tm Sec 25, 43 /S/SYS/tm wDay 25, 43 /S/SYS/tm_yDay 25, 43 /S/SYS/tm Year 25, 43, 152 /S/SYS/TouchError 25, 43

/S/SYS/Trend[<name>].c[<index>] 25.43 /S/SYS/Trend[<name>].c[<index>].s 25, 43 /S/SYS/Trend[<name>].t 25, 43 25, 43, 129, 134 /S/SYS/User /S/SYS/VariableVerify 43, 218

- \ -

\StorageCard\EPAM4 15

- A -

About 48, 72 Acknowledge alarms individually 124 Acknowledge all alarms 124 Acknowledgement 143 Acknowledgement from the PLC 124 Acknowledgement via EPAM 124 Action 74 Action column 79 ActionLimit1 74.80 ActionLimit1, ActionLimit2 columns 80 ActionLimit2 74, 80 Active screen saver for alarm event 140 Actual time on the PLC 218 ACTUAL.XMLA 136. 139 ADAM 126, 261 Adapting objects 31 Add Font 66 Add Language 68 Add-File context menu 97 AddIn 14 Additional documentation 9 Address 266 addressing 57 Add-Text context menu 97 ADS 59,87 Ads server 85 73, 120 Alarm 124 Alarm acknowledgement Alarm array in UserVar 120 Alarm buffer 120, 122, 124, 143 Alarm diagnostics 143, 170 Alarm display 124 Alarm export as CSV 124 Alarm filter 143 Alarm handling procedure 124 Alarm Helptext 122 Alarm history 120, 124 Alarm Info 122 143 Alarm information

Alarm list 122 Alarm message texts 122 Alarm number 122, 143 Alarm sorting 143 Alarm system variables 143 Alarm text 122 Alarm type 120, 143 80 Alarm:[<alarmtype>].set=<no> Alarm: [<type>].delete 152 Alarm:[<type>].export=csv 152 Alarm:[<type>].export=xml 152 Alarm:[<type>].guitall 152 Alarm:delete 20. 152 Alarm:export=csv 20, 152 Alarm:export=xml 152 Alarm:quitall 20, 152 Alarm:set=<no> 80 Alarm:Type 42 Alarm:type=<type> 20, 152 Alarm[<name>].Active 43 Alarm[<name>].ActiveCount 43 AlarmDelete 20 AlarmExport=CSV 20 AlarmFilter=activ 20, 143 AlarmFilter=activ/notquit 20, 143 AlarmFilter=activ+notquit 20, 143 AlarmFilter=all 20. 143 AlarmFilter=notquit 20, 143 122 Alarminfo AlarmInfo=1 20 AlarmInfo=2 20 AlarmList 73. 143 AlarmList default display 147 AlarmList definition 147 AlarmList example 147 AlarmList:[<name>].<action> 113 AlarmList:filter=activ 20, 152 AlarmList:filter=activ/notquit 20. 152 AlarmList:filter=activ+notquit 20, 152 AlarmList:filter=all 20, 152 AlarmList:filter=notquit 20, 152 AlarmList:info=<n> 113 AlarmList:info=1 20. 152 20, 152 AlarmList:info=2 AlarmList:quit 20, 152 AlarmList:sort=FiFo 20, 152 AlarmList:sort=LiFo 20, 152 AlarmList:sort=Priority 20, 152 AlarmList:Type 42 AlarmList[<name>].Info 43 43 AlarmList[<name>].Nr AlarmList[<name>].Text 43

AlarmList[<name>].Tin 43 AlarmList[<name>].Tin_dt 43 AlarmList[<name>].Tout 43 43 AlarmList[<name>].Tout dt AlarmList[<name>].Tquit 43 AlarmList[<name>].Tquit_dt 43 AlarmList[<name>].TxtInfo 43 AlarmNo 43, 143, 147 AlarmOff 43, 124, 143, 147 AlarmOn 43, 124, 143, 147 AlarmQuit 20, 43, 143, 147 AlarmQuitall 20 AlarmSort=FiFo 20, 143 AlarmSort=LiFo 20, 143 20, 143 AlarmSort=Priority Alarm-specific action 122 Alarm-specific Help text file 122 AlarmText 43, 143, 147 AlarmType=<myalarmtype> 20 AlarmType=<type> 143 Alpha channel 94 AMS router 85 AmsNetId 85 Angle=<Start>, <Degree>, <Scale Graduations> 181 animation 152 Animation speed 199 animation=bottomin 152 animation=leftin 152 animation=rightin 152 animation=topin 152 199 AnimationDelay=<delay> Animations 199 APP 42 APP.INI 42 Application QSS File 50 application.qss 203 arc 235 arc filled 235 Archive 62 ARGB 68 ARGB colors 94 82 Arrays ARTI 89 57 AtS7 AT-S7 40, 91 AT-S7 Soft-PLC system description 9 Authen 197 Authent 125, 215 Authent.login 129 Authent:addUser 152 Authent:addUserToRole=<Role> 152

Authent:changePwd 152 Authent:CurrentRoleName 43 Authent:CurrentUser 43 Authent:LastError 43 152 Authent:login Authent:logout 152 Authent:Pwd 43 43 Authent:User AuthentPasswd.pwd 129 Authorization levels 134 Auto increment 49 Automatic positioning 77

- B -

Backcolor 74.77 Backcolor=<color> 80 Background image 113 Backlight 43, 140 Backlight+<x> 20 Backlight-<x> 20 Backlight=<x> 20 BacklightDim 42 79 Backspace 149 Bar Bar example 149 Bargraph 149 Basic types 82 BEEP 50 **Beispiel Scrollist2** 118 Benefits of Excel 11 Benefits of this concept 11 Binary representation 218 Bitwise=AND 125, 134 black 94 blue 94 blur 92 BMP 36 BOOL 82 Border=Button 78 78 Border=Input Border=R<x> 78 Border=RoundR 78 Border=Shadow 78 Border=Signal 78 bottomin 152 94 brown Build 63 **Build Languages Text** 68 **Busy-Cursor** 266

 $\ensuremath{\textcircled{\sc c}}$ 2014 Grossenbacher Systeme AG

- C -

272

Calendar 166 Catalogue 177 CDown 79 CFGINI=Read 20 CFGINI=Write 20 Changing between the recipe types 187 Changing the recipe list directory 187 Checking network connections 244 Checking the connection 244 Circle 181 Class 122 CL eff 79 Click=inside 140 Close 20, 80, 152, 170, 191 Close=<name> 20, 80, 152, 170, 191 CloselfOk 218 CoDeSys 40, 56, 89, 120, 261 Codesys Soft-PLC system description 9 Codesys V2.x 40 Codesys V3.x 40 Coff 143 Color 74.77 Color context menu 97 Color definitions 68, 94 Color names 77 77 Color, Backcolor columns Color=<color> 80 Columns X, Y, DX, DY 77 Command to the PLC 152 Comment 74 Communication 50 Communication and variables 40 Communication channel 40, 91, 261 40.261 Communication driver Communication settings 55 Communication with Codesys V2.3 PLCs 89 Communication with Codesys V3 PLCs 89 Compilation function 68 Compiling the project and loading onto the target system 244 config-file 126 config-Idap 126 Connection test 63 Connection to the PLC 38 Consistency of recipe files 138 138 Consistency of recipe values Constant number as range 235 Contact 266 Context menu 97

Context menu action 97 Contrast+<x> 20 20 Contrast-<x> Contrast=<x> 20 Control flags 186 Control variable 131 Controls 143 Converting a message 32 Converting a meter 32 33 Converting a scroll list Converting EPAM3 projects to EPAM4 19.68 Country-specific keyboard layouts 218 Creating a recipe in EXCEL 139 Creating a small project from A to Z 240 Creating images 36 CRight 79 Csave=<myrecipetype> 20 Csave=list 20 CSV file 124 CUp 79 Current background color 77 Current font 76 Current foreground color 77 CurrentRoleName 43 CurrentUser 43 cursor=off 212 CursorDown 79 CursorLeft 79 CursorRight 79 CursorUp 79 cyan 94

- D -

dark blue 94 dark cyan 94 94 dark green dark grey 94 dark magenta 94 dark red 94 Data logging 131 Data source 261 142 Data type conversion Data types 31, 82 73, 130 DataLog DataLog definition 130, 131 Datalog definition example 131 Datalog:[<name>].delete 20, 131, 152 Datalog:[<name>].save 20, 131, 152 Datalog:exportall=<path> 152 Date and time formats 218

DateTime 43. 190 **DB** Number 91 Deactivate screen saver in the PLC 140 Decimal places 218 Default font 76 Default graphics editor 50 Default language 42, 68, 76 Default text editor 50 Defining object properties 242 Defining screen pages and objects 240 Definition of screen page layout 36 Definition of the alarm buffer in the PLC 120 Del 79 Delete 79 63 **Delete Datalog Delete INI files** 63 Delete recipe 63 Delete=list 20 Delete=myrecipetype 20 Deleting messages from the PLC 178 Demo projects 14 Development environment 14 **Device descriptions** 9 DHCP mode 43 **Diagnose signal** 170 Diagnostics 170 DiagSig example 170 Dial 203 Difference to EPAM3 41, 97, 108, 113, 130, 134, 136, 138, 140, 143, 152, 172, 178, 181, 187, 194, 199.218 DINT 82 Directory structure 15 DisabledPaint={Off:On} 199 DisabledPaint=Off 199 **Display** formats 78 Display of continuous text and formatted text 209 Display of numerical/alphanumerical variable 218 Displaying the date/time 31 Documentation 37 Down 181 Download 63, 244 **Download Fonts** 63 **Download Project Source** 63 **Download Recipe** 63 Download to local directory 63 DropDown list 172 DropDownList example 172 Drv[<driver>][<host>].LastError 43 Drv[<driver>][<host>].state 25, 43 drvAds.dll 85 drvMiif.dll 89

DRVParam 73.87 DrvParam worksheet 87 89 drvplch.dll drvrs7.dll 91 DT 82 DWORD 82 DX 74 DX=<width> 116, 118, 143, 172, 176, 187, 209, 212 DY 74 DY=<height> 116, 118, 143, 172, 176, 187, 209, 212

- E -

Easy Page Machine 9 Edit 218 Edit mode 218 Edit_val 43, 218 effect-disabled 92 effect-pressed 92 **EjectVolume** 20 EjectVolume(Drive;#page=<eject failed>;#page=<eject succeeded>) 152 Empty message 178 End 79 79 Enter EPAM / PLC handshake 120 EPAM color palette 77 EPAM Parameter command line 50 EPAM Start 136, 143 EPAM system messages 176 EPAM.INI 50 EPAM2RAM 50 EPAM3 261 EPAM3 and EPAM4 installation 19 EPAM4 9, 261 EPAM4 development environment 48 EPAM4 runtime system 15 EPAM4 toolbar 48 EPAM4IDE 14 EPAM4IDE.vsto 14 EPAM4-PLCHOST 85, 89, 91 Error 65, 122, 250 ESC 79 Ethernet[0].DhcpMode 43 43 Ethernet[0].Dns1lpAdr Ethernet[0].Dns2lpAdr 43 Ethernet[0].GatewayIpAdr 43 Ethernet[0].lpAdr 43 Ethernet[0].MacAdr 43 43 Ethernet[0].SubnetMask

EXCEL 240, 261 Exit 20, 80, 152 Exit action 74, 85 Exponential representation 218 Export 131 Exporting the alarm history 124 Extra menu 68

- F -

274

F1 79 F10 79 F11 79 F12 79 F2 79 F3 79 F4 79 F5 79 F6 79 F7 79 F8 79 F9 79 FastFlash 80, 170 Fatal 250 Fax 266 190 File FileCopy 20, 152 FileFilter 187 Filename=Auto 136 Filename=Auto10 136 Fill=Down 149, 227 fill=gradient 78 Fill=Left 149, 227 Fill=Right 149, 227 Fill=Up 149, 227 Fill=x 149, 227 Fill=y 149. 227 Filter 187 Filter:Role=<RoleID> 215 FixedSize 108, 109 Flash 80, 170 Floating point number 218 Font 74 Font column 76 Font context menu 97 76, 87 Font definition Font names 87 Font properties 66 FontMap 73, 87 FontMap worksheet 87 Fonts menu 66

force=1 143 force=2 143 Format 74 Format column 78 Format context menu 97 Format time=%ld 212 Formats variable 97 Formats variable context menu 97 Formatting the time stamp in Excel 124 Formula 124 Frames 113 FTP download 63, 244 FTP password 63 FTP server 244 FTP user 63 74 Function Function column 85

- G -

Gateway3 89 gesture 113 gesture:swipe:right 113 GetDT 20 GIF 36 Global objects 119 Global screen page 119 Graph 212 Graphics editor 72, 97 Graphics editor default 50 green 94 94 grey Grossenbacher Systeme AG 266 109, 111, 118 Group Group definition 106 Group definition example 106 Group object example 106 Group objects 106 111 Group parameter Group parameters 106 109 Group-Parameter

- H -

Help 48 Help text 122 HelpText 43, 218 HelpText=<n> 218 Hex 97 Hexadecimal representation 218 Hide scroll bar 209

HMI 261 HMI-Export 131 Home 79 Homepage 9, 266 HorizontalRibbonLayout 108.109 HorizontalScrollBarAlwaysOn 108 Hosts 73, 85, 89 Hosts worksheet 85.89 Hotfixes 264 Hour 218 HTML color values 77 HTML format 209

- | -

ICO 36 ID=<index> 43, 113 IDE 14, 261 IEC DT 31 IEC_TIME 31 Image files 36 Image formats 36 Images and text files 96 Implementation with Excel 37 243 Import symbol file Importing the alarm history in Excel 124 Importing variables 243 Index of the image to be drawn 186 Index variables 41 Indexed variable addressing 81 Info 250 Infra-red touch 43 Init 20 Init Action 74, 85 Init page 240 Init, Exit columns 85 **INIT PICTURE** 50 Init-Page 119 Input mode 218 Input of numerical/alphanumerical variable 218 INPUT DEVICE 50 Insert 79 Insert mode 218 Inserting new objects in the project 65 inside 235 Installation 14 Installation directory 14 Installation in a local directory 15 Installation on CompactFlash/SDCARD 15 Installation via FTP 15 INT 82

Integer data type 82 Integer digits 218 Integer representation 218 Integer values with decimal point 218 Introduction 9 inverted 203 Invisible 152 IP address 50, 194 IP address of the target system 63, 244 IPparam:Get 20, 152 IPparam:Set 20, 152 IrTouch 43

- J -

JPG 36

- K -

Keep_PWL 134 Key code 79 Key name 79 Key=<keycode> 20, 79, 152 Keyboard pages 152 Keyboard worksheet 79

- L -

42, 68 Language Language column 74 Language selection 152 20, 80, 152 Language=<name> Language=default 20 Language-dependent images and text files 96 Language-dependent texts 93 Language-dependent worksheets 96 68 Languages LastError 43 LDAP 126, 261 Left 181 Left2Right 214 leftin 152 Letter 218 Licence 72 license key 72 72 Licensing Limit action context menu 97 Limit value overshoot 80 Limit value range 80 Limit values 80 Limit1 43, 74

Limit1, Limit2 columns 80 Limit1/2 as range 235 Limit2 43, 74 Line break 76, 152 Line delimiter 76 LineHeight=<pixel> 172 LINT 82 List 209 187 Load/save/delete recipes Load_dat=LW: 20 Load=<filepath> 20 Load=<myrecipetype> 20 Load=list 20 Loading a recipe 139 Local directory 63 Localhost 89, 91 Loabook 250 LogDelete=<mydatalog> 20 130 Logging PLC data/variables LogSave=<mydatalog> 20 LogView 176.250 LogView definition 176, 177 LogView definition example 177 LogView example 176 LogView worksheet 177 LREAL 82 LWORD 82

- M -

magenta 94 Managing all texts 93 Managing languages 93 Managing multilingual texts 68 Master password 134 Master PW=<password> 134 MaxLines=<n> 172 Message 73, 178 Message definition 178, 180 Message example 178 Message list 178 Message number 178, 180 178, 180 Message text Message worksheet 180 Meter 181 Meter example 181 MIIF 40, 59, 89 Milliseconds 218 Minute 218 218 Mirror MMI 261

Move 140 Msg=<x> 20 Msgld 177 MsgText 177 Multi-level recipes 138 Multilingual applications 68. 152 multilingual texts 68 Multiple actions 79. 152 Multiple line texts 76 Multiple options 84

- N -

190 Name Name of the developer 49 Name of the project 240 NameFilter 187 New EPAM4 project 49, 240 New functions of EPAM4 19 NewPage 43. 113 136 NoActual NoBeep 42, 152, 191 NoDownload 136 72 Notepad Numerical data type 82 Numerical data types 82

- 0 -

Object 65,74 Object column 75 Object data type 82 Object disabled 84 Object flashing 84 Object inactive 84 Object status 84 Object visible 84 Off 125, 134 OnError:#Page=<name> 194 OnError:Close 194 OnError:Close=<name> 194 Online 20 **Online Help** 14, 48 Online Help context menu 97 Open=Up 172 240 Opening a new project Operating error 140 Operating principle 11 74,84 Option Option column 84 97 Option context menu

Option Insert undefined text 68 orientation=horizontal 203 orientation=vertical 203 Output of messages 178 outside 235 overwrite formulas 68

- P -

Page 113 Page example 113 77 Page Wizard Page=Dialog 113 PageBack 152 PageDown 79 20, 152 PageHome Pageld 43, 113 PageldLast 43, 113 PageName 43, 113 PageUp 79 Paint 72 Parameter 109 Parameter command line 50 Parameter lists 81 Parameters 106. 111 Password 134. 244 Password formula 134 Password level 134, 152, 172, 191, 227, 232 Password level after program start 134 Password management 134 97 Password protecting an EPAM project Password <level> 42 Password=<password> 194 Passwortlevel 43 PATH_DAT 50, 131, 139 PATH FNT 50 50.80 PATH INI PATH LIB 50 PATH_LOG 50, 131 PATH PRJ 50 PATH RAM 50 PATH_REC 50, 139 PCX 36 PDU-MaxSize 91, 266 Persistent 92 PgDn 79 PgUp 79 Ping 244 Pipette 68 Placeholders 106 Platzhalter 109

PLC 261

PLC handler 40, 89 PLC settings 55 PIcCmd=/<Drv>/<Host>:{Stop!Start!ResetWarm!Res etCold|ResetOriginal|CreateBootProject} 20 PIcCmd=/<Drv>/<Host>:CreateBootProject 152 PlcCmd=/<Drv>/<Host>:ResetCold 152 PlcCmd=/<Drv>/<Host>:ResetOriginal 152 PlcCmd=/<Drv>/<Host>:ResetWarm 152 PIcCmd=/<Drv>/<Host>:Start 152 PlcCmd=/<Drv>/<Host>:Stop 152 PIcCmd=[[/<Driver>/][<Host>]:Command 20 PLCH 40.87 PNG 36 Popup 113 Pos={Center{Left{Right}} 206, 218 Pos=Center 152, 172, 178, 186, 191, 199, 206, 218 Pos=Left 152, 172, 178, 191, 199, 206, 218 Pos=Right 152, 172, 178, 191, 199, 206, 218 Position X 186 Position Y 186 Preventing operating errors 38 PrintScreen 20 Programmer 49, 50 Project 73 Project directory 15 65 Project Explorer Project implementation 36 Project information 50 49.50 Project name Project New 49 Project path 49 Project settings 50 Project version 49 project.prj 63 PROJECT_FILE 50 ProjectName 43 ProjectProgrammer 43 Project-specific settings 50 43 ProjectTarget ProjectVersion 43 Protection from accidental operation 140 Protection from operating errors 140 PWL 43, 125 PWL=<level> 20, 125, 134, 152, 172, 178, 181, 191, 218, 227, 232 PwlRequired 43 92 рх

- Q -

278

Qt style sheet 50, 209 Qt-Library 9 Quick start 240

- R -

Rack number 91 RadioButton example 191 Ramdrive 50, 131 Ranges as array 235 Raw 120 RC Password 43 Rcinput_enable=no 20 20 Rcinput enable=yes RCInput enabled 43 REAL 82 Reboot 20, 152 Recipe 73. 136 Recipe date 190 Recipe definition 136, 138 Recipe file 187, 190 Recipe handling 136 187 Recipe list Recipe management 136, 139 Recipe name 187, 190 136, 187 Recipe type 136 Recipe variables 20, 139, 152 Recipe:[<type>].csave Recipe:[<type>].delete 20, 152 20, 139, 152 Recipe:[<type>].load Recipe:[<type>].load=<filepath> 20 Recipe:[<type>].save 20, 139, 152 Recipe:Path 42 Recipe:Type 42 Recipe:type=<type> 20, 152 Recipe[<type>].file 42 Recipe[<type>].name 42 RecipeList definition 187, 190 RecipeList definition example 190 RecipeList example 187 20, 152 RecipeList:csave 20, 152 RecipeList:delete 20, 139, 152 RecipeList:load RecipeList:save 20, 152 RecipeList:sort=file 20, 152 RecipeList:sort=name 20, 152 RecipeList:sort=time 20, 152 red 94

Reference point 77 Register key 72 Remote control 194 RemoteClient.connected 43 RemoteClient=drop 20 RemoteControl 43. 194 RemoteControl of equally sized screens 194 RemoteControl:connection.drop 20. 152 RemoteControl:input.disable 20, 152 RemoteControl:input.enable 20, 152 Requirements 14 Requirements of the development system 14 Requirements of the target system 14 Restart 152 Return 79 Right 181 Right2Left 214 152 rightin RoleList 197 Rotating and moving images 186 Rotation angle 186 RS7 40.87 **RS7Hosts** 73.91 RS7Hosts worksheet 91 RTS 14, 15, 261 **RtsVersion** 43 Runtime error 250 Runtime errors 250 14, 15 Runtime system 15 Runtime system for devices with WindowsCE

- S -

S 73, 92 s_alarm[<name>].active_count 25 s_alarm_active 25 25 s_alarm_info s_alarm_nr 25 s_alarm_text 25 25 s_alarm_tin s alarm tin dt 25 25 s_alarm_tout s_alarm_tout_dt 25 25 s alarm tquit s alarm tquit dt 25 s_alarm_txtinfo 25 25 s_alarm_type s_backlight 25 s_contrast 25 25 s dhcp mode s_dns1_ip 25

s_dns2_ip 25 s_edit_val 25 s_epam_date 25 25 s_epam_version 25 s_gateway_ip s_helptext 25 s_input_val 25, 218 s irtouch 25 25 s_language 25 s_limit1 s_limit2 25 s_myrecipetype _dnload_max 25 s myrecipetype cur file 25 25 s_myrecipetype_cur_name 25 s_myrecipetype_dnload_act s_myrecipetype_file 25 s_myrecipetype_name 25 s_myrecipetype_upload_act 25 s_myrecipetype_upload_max 25 s_mytrend_c1 25 s_mytrend_c2 25 s_mytrend_c3 25 s_mytrend_c4 25 s_newpage 25 25 s_pageid_last 25 s_pageidx s_pagename 25 s_password 25 25 s_password_x 25 s plcstate 25 s_plcstate_<hostname> s_projectname 25 s_projectprogrammer 25 25 s projecttarget 25 s_projectversion s_pwl 25 s_pwl_required 25 25 s rc password 25 s_recipe_path s_recipe_type 25 s_recipelist_empty 25 s remoteclient connected 25 s subnetmask 25 25 s_target_ip s tm day 25 25 s tm hour 25 s tm isdst 25 s_tm_min 25 s_tm_mon 25 s tm nsec 25 s tm sec 25 s_tm_wday

s_tm_year 25 s_toucherror 25 s_trend_t 25 25 s trend t hour s_trend_t_mday 25 s_trend_t_min 25 s_trend_t_mon 25 25 s trend t sec 25 s_trend_t_wday 25 s_trend_t_year s_unit_idx 25 s user 25 s user x 25 S7 57 S7 controllers with Ethernet CP module 40 S7 PLCs 91 S7 PLCs via CP 91 40.91 S7-1200 S7-CP 91 save original project to 68 Save_dat=LW: 20 Save log=LW: 20 Save=<myrecipetype> 20 Save=list 20 Save=SysVar 20 Saving a recipe 139 Saving alarm history as a CSV file 124 scale 68 68 scale fonts 68 scale pictures scales 68 Scaling 68 Screen keypad 152, 218 50 Screen resolution 140 Screen saver Screen X 68 Screen Y 68 ScreenSaver 140 116 Scroll bar 33 Scroll list Scroll list definition 108 Scrollbar 118, 203 Scrollist 109, 116, 118 Scrollist example 116 Scrollist2 109, 118 109 Scrollist2-Definition Scrollx=<x> 20 Scrolly=<x> 20 SE_SYSTEMTIME_NAME 152 Search filter 97 Second 218 Selecting the target system 49

Selection mode 218 Set variable value 152 Set_focus 218 SetDate 20 SetDateTime 20, 152 SetIndex 20 SetIndex=<x> 20 SetTime 20 73 Setup 14 SetupEPAM4 SetupTargetFirmwareEPAM4 15 SetVar 149, 152, 170, 172, 181, 186, 191, 206, 218 SetVar:<Variable1>={<constant>!<variable2>} 20, 80 SetVar-{<constant> <variable>} 20 SetVar+{<constant>¦<variable>} 20 SetVar+<x> 20 SetVar-<x> 20 SetVar={<constant>¦<variable>} 20,80 SetVar=<x> 20 SetVar=Limit1 80 SetVar=NotVar 20. 152 ShiftCursor=<x> 20 ShiftGrid=<x> 20 ShiftPage=<x> 20 Siemens 40 Sign 218 Signal 199 Simens 89 Simotion 40. 59. 89 Simulation 11, 50, 63 Simulation on the development PLC 242 Simulation settings 50 SINT 82 Slider 203 Slot number 91 Soft-SPS AT-S7 40 Sort recipe list 187 Sort=<column> 187 Sort=File 20 Sort=Name 20 Sort=Number 20 Sort=Time 20 Sort=Type 20 76 Special characters Start menu 63 Start page 49.240 Status word 136 Step7 40, 120 StorageCard 15 STRING 82

Structure of system messages 250 Structure of the alarm buffer 120 Structure of the EXCEL spreadsheet 74 Structuring of screen pages 36 50 Style sheet Style=Gradient 181 StyleSheet 92 Summary of requirements 36 264 Support SVG 36 swipe 113 Switch 206 Switch=<condition> 152. 199 Symbol file 55, 85, 89, 91 Synchronizing variables 142 SYS 43 Svs2PLC 43, 73, 142 Sys2PLC definition 143 SysPW=Off 134 System messages 176, 250 System password 134 System requirements 14 System time 152, 218 System variables 25, 41, 194 System variables in recipes 138 System=<excutable> [[options]] 80, 152 System=<executable> [-d <working directory>] 20 System=<myprg.exe> 20

- T -

Target 15, 49 Target device 49 Target settings 50 49, 50 Target system Target system settings 50 Telephone 266 Test connection 244 Text 73, 218 Text editor 72 Text editor context menu 97 Text editor default 50 Text files 96 Text worksheet 93 Text/File 74 76 Text/File column TextList 209 TextList example 209 Time 31, 82, 218 Time/date functions 218 Timeout=<min> 134, 140

Timeout=<sec> 152. 172 Timeout2=<min> 140 TimeStamp 177 Tips for touch screen applications 38 TipVar=<value> 152 TipVar=<x> 20 tm_Day 43 tm Hour 43 43 tm HourMax tm_lsPM 43 tm_Min 43 tm Mon 43 tm nSec 43 tm Sec 43 42 tm_UseAmPm tm_wDay 43 tm_yDay 43 tm Year 43 TMP 46 Toolbar 48 Tools menu 72 **Tools settings** 50 topin 152 Touch calibration 152 Touch calibrate 20, 152 TouchError 43 TP OAMIIF 59 Transparency=<color> 113, 152, 178, 181, 191, 199 Transparent 94 Trend 73. 212 Trend definition 212, 214 Trend example 212 Trend:.ZoomXReset 152 Trend:[<name>].online 152 Trend:[<name>].ScrollEnd 152 Trend:[<name>].ScrollGrid<offset> 152 Trend:[<name>].ScrollPage<offset> 152 Trend:[<name>].ShiftCursor<offset> 152 Trend:[<name>].ZoomXGrid<factor> 152 Trend:[<name>].ZoomXPage+1 152 152 Trend:[<name>].ZoomXPage-1 Trend:[<name>].ZoomXReset 152 Trend:online 20, 152 Trend:ScrollEnd 152 Trend:ScrollGrid<offset> 20, 152 Trend:ScrollPage<offset> 20, 152 Trend:ShiftCursor<offset> 20, 152 Trend:ZoomXGrid+1 20 Trend:ZoomXGrid<factor> 152 Trend:ZoomXGrid-1 20 Trend:ZoomXPage+1 152

Trend:ZoomXPage-1 152 Trend[<name>].c[<index>] 43 Trend[<name>].c[<index>].s 43 Trend[<name>].t 43 Triggering a screen page change in the PLC 113. 119, 142, 199 Triggering the log function 131 TwinCat 59, 85, 261 Type=<myrecipetype> 20 Type=<name> 120, 130, 212 Type=<recipetype> 187 Type=Dial 203 Type=off 20 Type=password 218 203 Type=Scrollbar

- U -

UDINT 82 UINT 82 209 Unicode Unit system 85, 225 unit=<index> 20, 152, 225 Up 181 User 43 User colors 68 User name 244 User settings 50 User/Password 125 User <level> 42 UserColor 73, 94 UserColor worksheet 94 UserList 215 User-specific colors 77 User-specific display of the scroll bars 209 User-specific settings 50 UserVar 73, 95 UserVar worksheet 95 USINT 82 USR 46, 92 USR.INI 92

- V -

Variable 218 Variable action 152 Variable addressing 57 Variable example 218 Variable list 131, 143 Variable name 25, 41 Variable selection list 97

© 2014 Grossenbacher Systeme AG

EPAM4-Manual

282

VariableVerify 43, 218 Varpool:[<driver>][<host>].export 152 Varpool:sysvarsave 20, 80, 92, 152 VarState 74, 84 VarState column 84 VarStateOnOffInverted 84, 109, 149, 152, 170, 172, 178, 181, 186, 191, 194, 199, 206, 218, 227, 232 VarType 57, 74, 82 VarType context menu 97 74, 81, 152, 225 VarValue VarValue column 81 VarValueToScrollX 108, 109 VBar 73, 227 VBar definition 229 VBar example 227 Verify 43, 218 Version 50 Version display 48 Version history 266 version.html 15 VerticalRibbonLayout 108.109 VerticalScrollBarAlwaysOn 108 VisualBar 227 VisualMeter 232 VisualMeter object 232 VMeter 73. 232 VMeter definition 232, 235 VMeter example 232 152, 191, 199, 206, 218 VPos={Top;Bottom} VPos=Bottom 206 VPos=Top 206 VSTO 14

- W -

Warning 65, 122, 250 Warnings/Errors 65 What is EPAM ? 9 What is EPAM4 ? 9 white 94 Why EXCEL ? 11 WINDOW SIZE 50 Windows handling 113 WindowsCE system description 9 WindowsXP system description 9 WORD 82 Workbook 261 261 Worksheet Worksheet S 92 Worksheets 73 Worksheets in EXCEL 73

Writing the date/time to PLC 31 WSTRING 82 www.easypagemachine.com 14, 264 www.gesys.ch 266

- X -

X 74 X/Y graph 212

- Y -

Y 74 Y/T graph 212 yellow 94

- Z -

Zoom	20
Zoom-	20
Zoom+	20
ZoomX-	20
ZoomX+	20
ZoomY-	20
ZoomY+	20