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Tips & Tricks with TIA Portal (#TIAtips) powered by Mister Automation

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www.siemens.com/tia-portal

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TIA Portal Tips & Tricks by Mister Automation

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Tobias Schuh • 1. Head of team "Engineering Workflow" bei Siemens 2 Wochen

TIA Tip 027 - Details view for fast tag access You want to use global tags or variables from data blocks in your program or screen? Using the details view you can drag and drop tags to seve ... mehr anzeigen

Übersetzung anzeigen





Tips & Tricks by Mister Automation

Our TIA Portal expert Tobias Schuh is looking forward to share news, tips & tricks as well as insights behind the scenes of TIA Portal.

Youtube Playlist

Our TIA Portal expert Tobias https://www.youtube.com/playlist?list=PLw7lLwXw4H53wrYw Dsm-LULI_1CbOcNN6

Social Media Profiles

Tobias Schuh @LinkedIn:www.linkedin.com/in/tobias-schuhTobias Schuh @Twitter:https://twitter.com/MrTobiasSchuh

Further information

all #TIAtips as Slides: all #TIAtips via LinkedIn:

www.siemens.com/tiatips www.siemens.com/tiatips-linkedi

Navigation



1	Handle	the	surface	and	windows
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2 Configure Hardware and Network

3 Program PLCs

4 Project HMIs

5 Work with libraries

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Navigation



2 Configure Hardware and Network

3 Program PLCs

4 Project HMIs

5 Work with libraries

TIA Tip 002 1/2 – Customized window layouts



Window Help	Save current window layout a	15	×
Close all Ctrl+Shift+F4 30	Save or update current wi	indow layout	
Next editor Alt+Ctrl+Right Previous editor Alt+Ctrl+Left	Name: Description:	Work+TasksFloat Work area with Task card floating	
Split editor space vertically F12 Split editor space horizontally Ctrl+F12	Window layouts		
Bestore active window layout Shift+Alt+0	Active Name Active Name 1 O Default window lag	Description Shortc yout Default configuration Shift+/	tcut +Alt+1
Default window layout Shift+Alt+1 Work+Project+Tasks Shift+Alt+2	2 Work+Project+Task 3 Work+Tasks 4 Work+Inspector	ks Work area with Project tre Shift+/ Work area with Task card Shift+/ Work area with Inspector Shift+/	^{+Alt+2} +Alt-Customized window layouts
Work+Tasks Shift+Alt+3 Work+Inspector Shift+Alt+4	5 Add new>	Shift+/	AR With windows layout you're able to customize and save window settings for corresponding
More window layouts	<	1111	use cases. With keyboard shortcuts you can easily switch between saved layouts very fast
		Save	Cancel

TIA Tip 002

Source: TIA Portal

TIA Tip 002 2/2 – Customized window layouts

Settings						_ 7 =
▼ General	1					
General	Mana	ge all wi	indow layouts			
Software updates	Mai	nage all	window layouts			
Script/text editors		5	, î			
Print settings		Active	Name	Description	Shortcut	
Library settings	1	0	Default window layout	Default configuration	Shift+Alt+1	
Search in project	2	Õ	Work+Project+Tasks	Work area with Project tree and Task card	Shift+Alt+2	
Cross-references	3	Õ	Work+Tasks	Work area with Task card	Shift+Alt+3	
Manage all window layouts	4	Õ	Work+Inspector	Work area with Inspector window	Shift+Alt+4	
Basic integrity protection	5		Work+TasksFloat	Work area with Task card floating	Shift+Alt+5	
 Hardware configuration 			1			
PLC programming						
STEP 7 Safety						
Simulation						
Online & diagnostics						
PLC alarms						
Visualization						
SiVArc						
Keyboard shortcuts						
Password providers						
Multiuser						
Teamcenter Gateway	-					
External applications						
Charts						
CAx	1	. ∓	X			
Sirius ES						



Customized window layouts

With windows layout you're able to customize and save window settings for corresponding use cases. With keyboard shortcuts you can easily switch between saved layouts very fast.

TIA Tip 002

Source: TIA Portal

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TIA Tip 003 1/2 – User defined keyboard shortcuts



General						
Hardware configuration	Keyboard	shortcuts				
PLC programming						
STEP 7 Safety	1.1.4.4.6.4	h				
Simulation	LISTONS	shortcuts				
Online & diagnostics	Select t	the desired list of shortcuts. User-defined lists car	be imported and exported	d under Options > Setting	gs > General > Import/export sett	tings.
PLC alarms		Antice list of the starter. Sustain date	ad charteuts			
Visualization		Active list of shortcuts: System-delin	ied shortcuts			
SiVArc	<u> </u>	When a list is selected or changed, the shortcuts	are updated immediately	without a restart of the	TIA Portal	
Keyboard shortcuts		However, the display of the shortcuts for menu of	ommands is not updated	until after a TIA Portal res	tart.	
Password providers						
Multiuser	A	ction	System-defined shortcuts	User-defined shortcuts	Editor	
Teamcenter Gateway	1	 Editor-specific shortcuts 				~
External applications	2	Add new network	Ctrl+R	Ctrl+R	GRAPH	=
Charts	з	Add new network	Ctrl+R	Ctrl+R	Compare editor - GRAPH	
CAx	4	Add new network	Ctrl+R	Ctrl+R	Compare editor	
Sirius ES	5	Add new network	Ctrl+R	Ctrl+R	LAD/FBD/STL	
	6	Add new object (for example block, image)	Ctrl+N	Ctrl+N	General	
	7	Add new technology object	Ctrl+N	Ctrl+N	Diagnostics	
	8	Add new technology object	Ctrl+N	Ctrl+N	Diagnostics	
-	9	Add new technology object	Ctrl+N	Ctrl+N	Commissioning	
•	10	Add new technology object	Ctrl+N	Ctrl+N	PID commissioning	
	11	Add new technology object	Ctrl+N	Ctrl+N	FM355-2 C commissioning	
•	12	Add new technology object	Ctrl+N	Ctrl+N	Configuration	
	13	Add new technology object	Ctrl+N	Ctrl+N	Diagnostic editor	
	14	Add new technology object	Ctrl+N	Ctrl+N	EMC configuration	
	15	Add new technology object	Ctrl+N	Ctrl+N	TUN_ES commissioning	
	16	Add new technology object	Ctrl+N	Ctrl+N	CONT_C configuration	
	17	Add new technology object	Ctrl+N	Ctrl+N	MB_Red_Client configuration	
	18	Add new technology object	Ctrl+N	Ctrl+N	Commissioning editor	
	10	Add new technology object	Ctrl+N	Ctrl+N	Diagnostics	
	19	, as the terminenegy object				

User defined keyboard shortcuts

Fast handling of TIA Portal! With customizable user defined keyboard shortcuts you're able to work even faster during engineering or commissioning.

TIA Tip 003

Source: TIA Portal

TIA Tip 003 2/2 – User defined keyboard shortcuts



General	Keyboar	d shortcuts				
Hardware configuration						
PLC programming						
STEP 7 Safety	List of	shortcuts				
Simulation	Select	the desired list of shortcuts. U	ser-defined lists can be impo	rted and exported under Option	ns > Settings > General > Import	/export settings.
Online & diagnostics					_	
PLC alarms		Active list of shorte	tuts: User-defined shortcuts		-	
Visualization						
SiVArc		When a list is selected or cha	inged, the shortcuts are upda	ted immediately without a res	tart of the TIA Portal.	
Keyboard shortcuts		However, the display of the s	hortcuts for menu command	s is not updated until after a II/	A Portal restart.	
Password providers		0 - ei	Cutor of	- Constant and a start of a literature of a Constant	-laster - Editors	
Multiuser	1	- Editor	System-d	enned shortcuts User-defined	shortcuts Editor	
Teamcenter Gateway	1	Editor-specific shortcuts	culup.	i culup		
External applications	2	Add new network	Ctri+R	: Ctri+R	GRAPH	=
Charts	3	Add new network	it user-defined shortcuts		- GR	АРН
CAx	4	Add new network				
Sirius ES	5	Add new network	Restart the TIA Porta	I to update the shortcuts for m	nenu commands.	
	6	Add new object (for	• <u> </u>			
	7	Add new technolog	Action	Add now notwork		
	8	Add new technolog	Action.	Add new network		
	9	Add new technolog	Editor:	GRAPH		
	10	Add new technolog	Current shortcuts:	Ctrl+R	ing	
	11	Add new technolog	F	-	niss	ioning
	12	Add new technolog		Assign new shortcuts		
	13	Add new technolog			v r	
	14	Add new technolog	L. L	-	on and a second se	
		Add new technolog		 Remove shortcut 	sior	ning
	15	A share a second se			ratio	n
	15 16	Add new technolog			onfi	ourstion
	15 16 17	Add new technolog		01	K Cancel On	guration
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User defined keyboard shortcuts

Fast handling of TIA Portal! With customizable user defined keyboard shortcuts you're able to work even faster during engineering or commissioning.

TIA Tip 003

Source: TIA Portal

TIA Tip 004 1/3 – Exchange TIA Portal settings





Exchange TIA Portal settings

Sharing TIA Portal settings with automation colleagues is easy - select most important settings (e.g. project paths, Keyboard shortcuts,...), export and import them to share. Furthermore use centralized settings via a shared folder to synchronize different engineering systems.



Source: TIA Portal

TIA Tip 004 2/3 – Exchange TIA Portal settings



Settings		. I≣ ■ ×
General General Software updates Script/text editors		
Print settings Library settings	Import/export settings	
Search in project Cross-references	Export settings to file: Export settings	Exchange TIA Portal settings
Manage all window layouts Basic integrity protection	Import settings from file: Import settings	colleagues is easy - select most important
Hardware configuration	Central settings	settings (e.g. project paths, Keyboard
PLC programming		shortcuts) export and import them to share
STEP 7 Safety	Storage location for central settings: \\companyServer\CentralSettings\ExportSettingsFile.tps15_1 Browse	
Simulation		Furthermore use centralized settings via a
Online & diagnostics	View for objects in overview	shared folder to synchronize different
PLC alarms		engineering systems
Visualization	O Details	engineering systems.
SIVArc Keyboard shortcuts	◯ List	



Source: TIA Portal

TIA Tip 004 3/3 – Exchange TIA Portal settings

Export settings	×
Choose the settings that you want to export:	
- General	~
🕨 🗹 General	
Software updates	
Script/text editors	
Print settings	
Library settings	
🕨 📃 Search in project	
Manage all window layouts	
🕨 🗹 Basic integrity protection	
Hardware configuration	
PLC programming	
STEP 7 Safety	
Simulation	
Online & diagnostics	
PLC alarms	
Visualization	
▶ 🗹 SiVArc	
▶ 🗹 Keyboard shortcuts	~
Select all Deselect all Use the previously selected export:	
File name:	
C:\Users\Siemens\Documents\Automation\ExportSettingsEile_tps15_1	
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Export Ca	ncel



Exchange TIA Portal settings

Sharing TIA Portal settings with automation colleagues is easy - select most important settings (e.g. project paths, Keyboard shortcuts,...), export and import them to share. Furthermore use centralized settings via a shared folder to synchronize different engineering systems.

TIA Tip 004

Source: TIA Portal

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TIA Tip 005 – Use of reference projects

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oject Edit	View	Insert	Online	Options	Tools	Winde
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Children Andreite Children	Ove	erview		Ctrl+2		100000
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	Ins.	nector w	indow	Ctrl+5	-	
D Name	🛃 Ref	erence p	rojects	Ctrl+9		1
T Ext	Scr	een keyt	ooard (trl+Shift+K		~
	Add ne	w device			-	=
ക്	Devices	& netw	orks			
) Ea	RACK_1					
► E=	RACK_2					
) E	RACK_3					
	PACK A					~
✓ Referen	nce pro	jects				
3						
RACK	02 V15					~
- RACK	07 V15					
ath Dev	ices & n	etworks				
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• m 87.1	1 CPU41	6-7.2 [C]	PU 416-3	PN/DP1		
P 871	2 CPU31	5-7 3 [C]	PU 315-2	PN/DP1		
• m 87.1	2 CPU31	7-7 4 [C	PI1317-7	PN/DP1		
P 10 10 1	2 CPU31	7.7.5 [0	PU 317-2	PN/DP)		
	3 CPUIS	16.76	CPI11516	R PN/DP1		=
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• L R7.L	.7.CPU1:	517F-7.2.	Z-UNLOCK	CED [CPU 15	17F-3 PN/	
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<		1	0			>
✓ Details	view					
Module						
-						
Name						
Devic	e confio	uration				~



Use of reference projects

Copy objects between TIA Portal projects - it is not necessary to open a new TIA Portal window, just use reference projects to open projects read only. Copy software objects easily with drag & drop. Furthermore comparing software objects is possible.

TIA Tip 005

Source: TIA Portal

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TIA Tip 026 – Display Type name and Version column in PNV





Display Type name and Version column in PNV

Looking for the type name and version of objects in the project navigation? First activate the column header - then right-click on the column and select the type name and the version to be shown!



Source: TIA Portal

TIA Tip 033 1/2 – Window handling with shortcuts



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roject Edit View Insert Online Options	tools Window Help	Totally Integrated Automation
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PLC_1 [CPU 1516-3 PN/DP]		Counter operations
Device configuration	V Network 1:	Comparator operations
V Online & diagnostics		• E Math functions
Software units		Move operations
 Program blocks 		Conversion operations
Add new block		Program control operations
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Block_1 [FC1]		Shift and rotate
Block_2 [FC1]	E Charteute for window handling are	FIE Legacy
Technology objects	Shortcuts for window nandling are	
Energy objects	shown in the main menu "View"	
External source files	shown in the main menu view .	
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PLC data types		
Watch and force tables		
Doline backups		
🕨 🚰 Traces		
DPC UA communication		
Device proxy data	100%	
Program info	Block_1 [FC1] Block_1 [FC1]	1 m
PLC supervisions & alarms	General Taxts	
PLC alarm text lists	General 1943	200
Local modules	General Information	<u>^</u>
HML_1 [TP900 Comfort]	Information	
Ungrouped devices	Time stamps	
Security settings	Compilation Title:	
Common data	Protection Comment:	(n)
Documentation settings	Attributes	
Languages & resources		Extended instructions
Je Online access		> Technology
Card Reader/USB memory	Version: 0.1	> Communication
> Details view	Family:	> Optional packages
		e phone packages

Window handling with shortcuts

With <CRTL> + <Number> you're able to show or hide the common views of the TIA Portal framework. By this you can easily concentrate on the editor which is needed for the current task.

TIA Tip 033

Source: TIA Portal

TIA Tip 033 2/2 – Window handling with shortcuts



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Add new device	Block title:	Bit logic operations
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M C 1 [CPU 1516-3 PN(DP]	· Network 1.	Counter operations
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Software units		The Math functions
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Window handling with shortcuts

With <CRTL> + <Number> you're able to show or hide the common views of the TIA Portal framework. By this you can easily concentrate on the editor which is needed for the current task.

TIA Tip 033

Source: TIA Portal

TIA Tip 034 1/2 – Toggle Editors with shortcuts



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oject Edit View Insert Online Options T	loals Window Help				Totally Integrated Automatio
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	Block_1 [FC1] General Texts		Shortcuts for Next/P shown in the main m	revious editor are henu "Window". fo & Diagnostics	TEG Legacy
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Toggle Editors with shortcuts

A lot of editors and windows can be opened simultaneously. With the shortcut <ALT> + <CRTL> + <Left/Right> you can easily toggle between opened editors.

TIA Tip 034

Source: TIA Portal

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TIA Tip 034 2/2 – Toggle Editors with shortcuts



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Project tree	Project1 → PLC_1 [CPU 1516-3 PN/DP] → Program blocks → Block_1 [FC1]	Instructions 📑 🗊 1
Devices		Ontions
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	Block interface	> Favorites
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Project1		Ceperal
Add new device	▼ Block title:	Bit logic operations
Devices & networks	Comment	Timer operations
PLC_1 [CPU 1516-3 PN/DP]		Counter operations
T Device configuration	Network 1:	Comparator operations
Conline & diagnostics		Comparator operations
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 Program blocks 		Move operations
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- Main [081]		Program control operations
Block 1 [FC1]		Ha Word logic operations
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Traces		
OPC UA communication	100%	
Device proxy data	100%	4
Program info	Block_1 (FC1) Store Diagnostics	4
PLC supervisions & alarms	General Texts	1
PLC alarm text lists		4
Local modules	General Information	1
HML1 [TP900 Comfort]	Information	4
Ungrouped devices	Time stamps	
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Common data		
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Toggle Editors with shortcuts

A lot of editors and windows can be opened simultaneously. With the shortcut <ALT> + <CRTL> + <Left/Right> you can easily toggle between opened editors.

TIA Tip 034

Source: TIA Portal

TIA Tip 035 – Window maximizing with "Double-click"





Window maximizing with "Double-click"

Beside Shortcuts for window handling and toggle editors you can use a mouse double click on the top line to maximize the visible area and hide other windows - works also in split mode.

TIA Tip 035

Source: TIA Portal

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TIA Tip 036 – Pin and unpin area in split windows





Pin and unpin area in split windows

If you're using the editors in TIA Portal with split windows than it's very useful to use the Pins. With activated Pin the window will stay in the foreground if you open another editor.

TIA Tip 036

Source: TIA Portal

Page 20

Source: TIA Portal

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TIA Tip 052 – Group editors

E PLC alarm text lists

Local modules	General Texts Supervisions
Instributed I/O SINAMICS-S110-CU305PN-V4.4 [SINA	General Attributes
	Motor_1 (FB1) MC-Servo (OB91) MC-Interpolator (OB92) Min (OB1) HideShowParameter (FB3)
Portal view Overview	🔹 6 Code block 🚽 🥃 11 Data bl 🛓 📑 💽 🖓 The project TipsAndTricks was saved su 🎾

Properties

inShow



Group editors

With a lot of open editors an easy way to structure them is to group them. With one click it's possible to group all code or data blocks



Ti Info 🚺 🖸 Diagnostics



Navigation



1	Handle the	e surface a	and windows

2 Configure Hardware and Network

3 Program PLCs

4 Project HMIs

5 Work with libraries

TIA Tip 006 – Showing io tag variables on hardware modules



Tips&Tricks v	vith TIA Portal	▶ PLC_1	[CPU 1515-2 PN]													_ • • ×
											2	Topology vie	w 📩 Ne	twork vie	ew 🛐 De	vice view
St PLC_1 [CP	PU 1515-2 PN]	-	12 🖌 🖽 🛄 🤇	Q ±		_									Device	overview
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Off	Bool	%124.1	Default tag table													
Hold	Bool	%124.2	Default tag table													
Cause	Bool	%124.3	Default tag table													
	Bool	%124.4	Default tag table													
- Resume	Bool	%1124.6	Default tag table													
💶 Reset	Bool	%124.7	Default tag table													
Boost1	Bool	%125.0	Default tag table													~

Showing io tag variables on hardware modules

Showing IO tags in Device view gives an easy overview about the relationship of hardware modules and IO variables - by the way digital signals can be also monitored in online mode.

TIA Tip 006

Source: TIA Portal

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TIA Tip 007 – Show address labels in Network view





Show address labels in Network view

Especially with a lot of components in your project it's very useful to show all address labels - and you're also able to change the addresses without the need of switching to the inspector window or device view.

TIA Tip 007

Source: TIA Portal

TIA Tip 008 – Temporary store of not plugged modules in Device view





Temporary store of not plugged modules in Device view

Easy change of hardware configuration by drag & drop pre-configured Hardware modules to a temporary <<not plugged>> store. Of course you're also able to copy them to your local or global library to share with colleagues or use them in other projects.

TIA Tip 008

Source: TIA Portal

TIA Tip 009 – Customized hardware catalogue with profiles





Customized hardware catalogue with profiles

Hardware profiles allow customized availability of components in your very own hardware catalog. This is e.g. for end customer specific clearance lists of hardware. With this function you select and deselect devices in your Profile. Only selected components will be shown in the catalog after activation of the profile.



Source: TIA Portal

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TIA Tip 011 – Quick navigation in device & network view

igiDemoMachine 🕨 Devices & networks		_ # # X H
	Topology view 🔒 Network view	Device view O
Network Connections HMI connection	🔽 🗛 Relations 👑 🖏 🖽 🛄 🔍 ±	
		<u>^</u> v
	PLC_1516F	
		•
	PN/IE_1	
		Z
		+ wor
		- K dat
	HMI_KTP900F =1+CC002-21T1	=1+CC
	KTP900F Mobile V90 PN	V90 Ph
		PLC 14
	PLC_1516F	TEC_1.
III	> 100% -	
	Roperties Linfo Diagnos	stics
General		0
<u></u>		



Quick navigation in device & network view

In large projects navigating can take some time using the scrollbars. By a left mouse click on quick navigation button the visible area of the view will be shown and you can navigate with the mouse.

TIA Tip 011

Source: TIA Portal

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TIA Tip 019 – Export module labelling strips



S71500/ET200MP station_1

DI 16x24VDC HF_1

Rail_0 / 2

On

Off

Hold

Cause

Start

Stop

Resume

Reset

Boost1

Boost2

Boost3

Boost4

Boost5

Boost6

Boost7

Boost8

Export module labelling strips

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Ingenuity for life

Sensors and signals connected to your SIMATIC peripherals need to be documented. With the export of module labelling strips that task is very easy. Your symbolic tags will be exported and printed in the corresponding layout!

TIA Tip 019

Source: TIA Portal

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TIA Tip 029 – Add new lines in network editors





Add new lines in network editors

You want to rearrange your devices in the network editors? Via the context menu "Insert empty row" you can create space for moving or inserting devices.



Source: TIA Portal

TIA Tip 030 1/2 – Align devices to the left in network / topology view





Align devices to the left in network / topology view

In some cases it's useful to align all components in network or topology view again to the left. With one single click this is possible.

TIA Tip 030

Source: TIA Portal

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TIA Tip 030 2/2 – Align devices to the left in network / topology view





Align devices to the left in network / topology view

In some cases it's useful to align all components in network or topology view again to the left. With one single click this is possible.

TIA Tip 030

Source: TIA Portal

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TIA Tip 031 1/3 – Multi selection of devices with <SHIFT> + <Mouse Click Left>





Multi selection of devices with <SHIFT> + <Mouse Click Left>

With a lot of components in network or topology view you're able to select all components between 2 placed objects with this keyboard/mouse shortcut.

TIA Tip 031

Source: TIA Portal

TIA Tip 031 2/3 – Multi selection of devices with <SHIFT> + <Mouse Click Left>





Multi selection of devices with <SHIFT> + <Mouse Click Left>

With a lot of components in network or topology view you're able to select all components between 2 placed objects with this keyboard/mouse shortcut.

TIA Tip 031

Source: TIA Portal

TIA Tip 031 3/3 – Multi selection of devices with <SHIFT> + <Mouse Click Left>





Multi selection of devices with <SHIFT> + <Mouse Click Left>

With a lot of components in network or topology view you're able to select all components between 2 placed objects with this keyboard/mouse shortcut.

TIA Tip 031

Source: TIA Portal

TIA Tip 032 – Synchronize Network with Topology View





Synchronize Network with Topology View

If you've ordered your components in network view, you're also able to synchronize the placement with one click to the topology view.

TIA Tip 032

Source: TIA Portal

Source: TIA Portal

Connection resources

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Page 35

TIA Tip 039 – PLC StartUp mode

Tips&Tricks [CPU 1217C DC/I	ips&Tricks [CPU 1217C DC/DC/DC]							
General IO tags S	System constants Texts							
General PROFINET interface [X1]	Startup							
AI 2/AQ 2	Startup after POWER ON:	Warm restart - RUN			•			
 High speed counters (HSC) Pulse generators (PTO/PWM) Startup Cycle Communication load 	Comparison preset to actual configuration: Configuration time:	No restart (stay in STOP mode) Warm restart - RUN Warm restart - mode before POWER OFF 60000 ms OBs should be interruptible						
System and clock memory								
Multilingual support				PLC	StartU	p mode	9	
Time of day	•			lf vou	add a new	PIC to you	ur project th	
Protection & Security				n you				
Configuration control				standa	ard Startup	mode is "V	Varm restar	t - n

> 100%



SIEMENS Ingenuity for life



before POWER OFF". To guarantee an automatic try to Startup the PLC in RUN,

change it to "Warm restart - Run".

TIA Tip 040 – IO Channel templates and configuration overview





IO Channel templates and configuration overview

With channel templates it's easy to configure a huge amount of channel parameters. Configuration overview can be used to see and change the common settings in a table view.

TIA Tip 040

Source: TIA Portal

Unrestricted © Siemens 2020
TIA Tip 041 – Change Firmware Version of projected components



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oject tree 🛛 🖾 🖌 DigiDemoMachine	PLC_1516F [CPU 1516F-3 PN/DP]	_ ■ ■ X Hardware catalog	e 10 k
Devices	🖉 Topology view 🛛 👗 Network view 🔛	Device view Options	
🛄 🔡 🔐 PLC_1516F [CP	516F-3 Mul 🖷 🔛 🔣 🖽 🛄 🍳 ±	a 🔰	5
	1.5°.	▲ Catalog	
DigiDemoMachine	and the second s	= Search>	and and
Add new device	3 with		
n Devices & networks		Filter Profile: <all></all>	
PLC_1516F [CPU 1516F-3 PN/DP]		▶ <u></u>	
Device configuration		• • • • • • • • • • • • • • • • • • •	
S Online & diagnostics	100 0 1 2 3 4 5 6 14 22 31	· · · · · · · · · · · · · · · · · · ·	
😕 Safety Administration 🖬 Rail		DI 🖉	
🔻 🛃 Program blocks		• 🔄 • 🛄 DQ	
Add new block	7 15 23	• III DI/DQ	
🖀 Main [OB1] 🔤		▶ <u>₩</u> 4	
MC-Interpolator [OB92]		AQ	
AC-Servo [0891]	14 22 31	> III AllAQ	
ProgrammingError [OB121]		Communications modules	
PullOrPlugOfModules [OB83]		Technology modules	
RackOrStationFailure [OB86]		Interface modules	
Startup [OB100]	> 100%		
Eightinit [FC36] PLC_1516F [CPU 1	6F-3 PN/DP1 29 Properties 71 Info. (1) VI Diagnosti		
5 FOB_RTG1 [08123]			
Main_Safety_RTG1 [FB0] General IO	s System constants Texts		
Main_Safety_RTG1_DB [DB56] General		^	
Fail-safe Fail-safe			
PROFINET interface PROFINET interface	Period information		
CopyToHmiDB [FC2081] PROFINET interface	1 Hoject montador		
PullOrPlugModules [FC2083] DP interface [X3]		and the second se	
Rack_Or_Station_Failure [FStartup	Name: PLC_1516F		
DiagStartuploSystem [FB2 Cycle	Author: sivergen		
DiagStartupPlc [F82002] Communication los			
DiagnosticInfo [D829] System and clock r	nory Comment:		
HmiDB [DB2081] SIMATIC Memory Ca			
InstDiagStartupIoSystem [> System diagnostic:			
InstDiagStartupPlc [DB2002] PLC alarms			
▼ Ea EdgeCom Web server	Rack: 0		
oetTimestamp (FC22) DNS configuration	Slot: 1	✓ Information	
calcTime [FB40]		- Charles	
	Catalog information	Device:	
Time of day			
TimeCriticalFunction 100 [Protection & Securi			
TimeCriticalFunction_200 [> OPC UA	Short designation: CPU 1516F-3 PN/DP		
BufferMachine [DB112] System power sup	Description: Fail-safe CPU with display; work memory 1.5 MB code and 5 MB data; can be used for safety applications; supports consistent	tsafety A	
CacheMachine [DB155] Configuration contra	upload; supports RROFIsafe V2; 10 ns bit instruction time; 5-stage protection concept, integrated technology functions : motic	an	
DataCollector_D8 [D8156] Connection resource	control, coseed-top control, counting & measuring, instituterace: HNUHIETIO controller, supports RIIRT, performance upprade PROPINETV2.3, 2 conts, idevice, MRP, MRPD, transport protocol TOPIP, secure Open Lies Communication, 52 commu	unication, =	
PickAndPlace1 [DB130] Overview of addres	Web server, DNS client, OPC UA server data access, constant bus cycle time, routing; 2nd interface: PROFINETIO controller, su	upports Article no.:	
Energy Suite - program Runtime licenses	RT, Idevice, transport protocol TCPIP, secure Open User Communication, 57 communication, Web server, DNS Client, OPC UA	server	
EnS - black types	data access, routing; 3rd interface: PROFIBUS UP master, S7 communication, constant bus cycle time, routing; Runtime optio	.ns, Version:	•
EnS - energy objects	Article number: 6ES7 516-3FN01-0AB0	Description	
EnS - general program bloc.	Firmware version: V2.5		
EnergyQataPreparation			
The EnS -block types	Change armware version		
n N	Update module description		

Change Firmware Version of projected components

If you want to use new firmware functions it's needed to change the projected component after project upgrade. With context menu or button this is easily done.

TIA Tip 041

Source: TIA Portal

TIA Tip 054 1/2 – Delete access rights

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		fipsAndTricks → PLC_1 [CPU 1515-2 PN] → Program blocks → Main [OB1]	Instructions		
Devices			Options		
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		Main	> Favorites		
Name		Name Data type Default value Comment	✓ Basic instructions		
IpsAndTincks		A ver P input	Name	Version	
Add new device		1	General		
Devices & networks			Bit logic operations	V1.0	
 Li PLC_1 [CPU ISIS-2 PN] 		outamp boo	Timer operations	V1.0	
Device configuration		/ vul = insens gool	▶ +1 Counter operations	V1.0	
 Online & diagnostics 			Comparator operations		
Seg Software units			Math functions	V1.0	
Program blocks		A add news	Move operations	<u>V2.4</u>	
lechnology objects	•		Conversion operations		
Carried States			 Program control operati 	. V1.1	
Plan External source nies			Word logic operations	V1.4	
Picturys		Block title: "Main Program Sweep (Cycle)"	 Extended instructions 		
Leg FLC data types	-	Comment	Name	Version	
Opling hadrong			Date and time-of-day	V2.2	
 Up online backups Transa 		Network 1: HideShowParameter	String + Char	V3.7	
 Indes Opcilia companyinting 		Network 2: Motor	Process image	V1.1	
Device executate			Distributed I/O	V2.7	
Device proxy data		Network 3: 10-stray	PROFlenergy	V2.7	
Program into			🕨 🛅 Module parameter assig	V1.2	
The Cale of a set lists			Interrupts	V1.2	
Piccatarini text lists			Alarming	V1.5	
Contine card data			Diagnostics	V1.7	
Distributed I/O			Recipe and data logging	V1.3	
	×		Data block control	V1.3	
Upgrouped devices	•		Addressing	V1.3	
Figure devices			Y Technology		
Cross device functions			Name	Varrian	
Common data			Name	Version	
			BID Control		
DY Sustem disconstic settings		10/8	Motion Control	V5.0	
Supervision settings		🖾 Properties 🚺 🔝 Diagnostics 🔰 Plug-ins 👘 🔍		V5.0	
T B Logr		General Cross-references Compile Energy Suite Syntax Generate	Time-barad IO	V2.0	
Instruction profiler				42.0	
Silvare		C A C Show all messages			
 Documentation cattings 	-				
Languages & resources		Message Go to ? Date Time			
Version control interface		🔮 🔻 Start downloading to device. 1/30/2020 11:59:42 AM			
Online access		✓ ▼PLC_1 1/30/2020 11:59:42 AM			
Gard Peader/USB memory		Main' was loaded successfully. 1/30/2020 11:59:45 AM			
and neaderous memory		Loading completed (errors: 0; warnings: 0). 1/30/2020 11:59:45 AM			
		Connection to PLC_1 terminated. 1/30/2020 11:59:54 AM			
		Connected to PLC_1, via address IP=192.168.0.1. 1/30/2020 11:59:58 AM			
		Start downloading to device. 1/30/2020 12:00:10 PM			
		PLC_1 1/30/2020 12:00:10 PM			
		Action canceled before download. 1/30/2020 12:00:15 PM			
		✓ ▼ Start downloading to device. 1/30/2020 12:00:20 PM			



Delete access rights

It could be helpful in some cases to delete the access approval with enabled PLC access protection. Afterwards you have to type in the access password again

TIA Tip 054

Source: TIA Portal

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TIA Tip 054 2/2 – Delete access rights



PLC_1 [CPU 1515-2 PN]					Rroperties
General IO tags Sy	stem constants Texts				
General	Destastion 9 Converts				
PROFINET interface [X1]	Protection & Security				
 PROFINET interface [X2] 	Access level				
Startup					
Cycle					
Communication load	Select the access level for the PLC.				
System and clock memory					
SIMATIC Memory Card	Access level		Access		Access permi
 System diagnostics 		нмі	Read	Write	Password
PLC alarms	Full access (no protection)	~	✓ ×		******
Webserver	Read access	- V	×		
Display	HMI access	- V			
Multilingual support	No access (complete protection)				
Time of day					
Protection & Security					
OPC UA	-				
 System power supply 	Read access:				
 Advanced configuration 	TIA Portal users will have read access to all functions. HMI applications can access all functions				
Connection resources	interopheatons can access an unctons.				
Overview of addresses	Mandatory password:				
Duration Constant	Eor additional write access TIA Portal users need to e	enter the "f	full access" pa	assword.	

Delete access rights

It could be helpful in some cases to delete the access approval with enabled PLC access protection. Afterwards you have to type in the access password again

TIA Tip 054

Source: TIA Portal

TIA Tip 055 – Hardware configuration in multiple editors





Hardware configuration in multiple editors

In some cases like copy components between 2 Controller configurations or for simple compare scenarios you can open more than one editor.

TIA Tip 055

Source: TIA Portal

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TIA Tip 056 – User defined logo and display protection







User defined logo and display protection

Add images as display background for S7-1500 controller, e.g. company logo! Recommendation: enable display protection to prevent unauthorized access!

TIA Tip 056

Source: TIA Portal

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Navigation



1	Handle the surface and windows

2 Configure Hardware and Network

3 Program PLCs

4 Project HMIs

5 Work with libraries

TIA Tip 001 – Search and open block/PLC data type with F7



Project tree 🔲 📢 Di	igi	Project tree 🔲 🖣 DigiD	
Devices		Devices	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	F N	🛅 🗃 💽 Ne	
		 ✓ DigiDemoMachine ▲ Add new device ▲ Devices & networks ✓ □ PLC_1516F [CPU 1516F-3 PN/DP] ■ Device configuration 	
😧 Onli Open	-	Open block/PLC data type X	
Safe Open in new editor	Ξ.	Select a block or PLC data type:	
Image Soft Open block/PLC data type F7 Image Processing Image Copy Ctrl+X Image Department Image Department Ctrl+V		Convey ConveyorCall FC34 PLC_1516F [CPU 1516F ConveyorInit FC4 PLC_1516F [CPU 1516F ConveyorInit FC4 PLC_1516F [CPU 1516F With F7 you're able to search for blocks and PLC data types. Intelligence is also support	d ed!
		TIA Tip 00'	1

Source: TIA Portal

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TIA Tip 010 – Define, rename or rewire tags which are used in one program network

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t_ ,													
Tricks => D	efine tag, r	ename ta	a. rewire ta	ag with	NWse	lectio	n						
				3									
	%DB126												
*Ir	ot"	orRob											
	%FB43												
	MotorCont	rol"											
EN		E	NO	102						-			
enable		mo	otor — lais	se									
stop													
GRO PR													
	Tricks => D *Ir EN enable start stop	Tricks => Define tag, r %DB126 *InstConveyc ot* %FB43 *MotorCont EN enable start stop	Tricks => Define tag, rename tag *UB126 *InstConveyorRob ot* *EN EN enable start stop	Tricks => Define tag, rename tag, rewire tag * * * * * * * * * * * * *	Tricks => Define tag, rename tag, rewire tag with %DB126 *InstConveyorRob ot* %FB43 *MotorControl* EN enable start stop	Tricks => Define tag, rename tag, rewire tag with NW se %DB 126 *InstConveyorRob ot* %FB43 *MotorControl" EN ENO enable motor — false start stop	Tricks => Define tag, rename tag, rewire tag with NW selection %DB126 *InstConveyorRob ot* %FB43 *MotorControl" EN ENO enable motor false	E EN WFB43 MotorControl" EN enable start stop	Image: Second start stop	Image: Second secon	Image: Second secon	Image: Section of the section Section of the	Image: Section of the section

Define, rename or rewire tags which are used in one program network

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Ingenuity for life

Changing tags in LAD or FBD is very easy by the use of context menu or buttons on top. By selection of the whole network defined and not defined variables are selected automatically and can be changed simultaneously. Switching between plc tag tables is also possible!

TIA Tip 010

Source: TIA Portal

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TIA Tip 012 – Drag & Drop with and without <CTRL>





Drag & Drop with and without <CTRL>

Maybe the most used function in TIA Portal is Drag & Drop. By combining it with key <CTRL> you're also able to copy & paste objects instead of cut & paste them.

TIA Tip 012

Source: TIA Portal

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TIA Tip 013 – Auto Layouting of code in SCL editor



ngibe	emolv	
ನಕಿ =ನ		
		- 1 = 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	29	
	30	// evaluate diagnosis information for devices in an IO system
	31	//=
	32 8	<pre>]IF (#tempGeoAddr.AREA = #AREA FROFINET)</pre>
	33	OR (#tempGeoAddr.AREA = #AREA PROFIBUS)
	34	THEN
	35	
	36	//
	37	// determine index for IO system
	38	//=====================================
	39 8	FOR #tempindex := 1 TO "MAX_SYSTEM" DO
	40 8	IF (#ioSystem[#tempindex].ioSystemId = #tempGeoAddr.IOSYSTEM)
	41	THEN
	42	<pre>#tempIoSystemIndex := #tempindex;</pre>
	43	END_IF;
	44	END_FOR;
	45	
	46 8	∃IF (#temploSystemIndex <= "MAX_SYSTEM")
	47	AND (#tempGeoAddr.STATION <= "MAX_MODULES_DEVICE")
	48	AND (#tempGeoAddr.SLOT <= "MAX_MODULES_DEVICE")
	49	THEN
	50	// check modules plugged
	516	lt (€eventClass = #MODULE_PLUGGED)
	52	INEN
•	50	// reset error state only if the correct module is inserted
	55	Dr (Faulta = WODDE_MICLES)
	56	THEN THE
	57	<pre>ioSystem[itemploSystemIndex].device[itempGeoAddr.STATION].error := FALSE:</pre>
	58	#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].slot[#tempGeoAddr.SLOT].slotErrorState := FALSE:
	59	
	60 8] JF (#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].errorState = "DEV_STATE_FAULT")
	61	THEN
	62	<pre>#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].errorState := "DEV_STATE_WAS_FAULT";</pre>
	63	ELSIF (#ioSystem[#temploSystemIndex].device[#tempGeoAddr.STATION].errorState = "DEV_STATE_LOST_CON")
	64	THEN
	65	<pre>#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].errorState := "DEV_STATE_WAS_LOST";</pre>
	66	ELSE
	67	<pre>#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].errorState := "DEV_STATE_OK";</pre>
	68	
	69	LEND_IF;
	70	
	71	// oneck modules pulled
	72	PTDIE (AEAGUOTISSA = AMONOFF ANTERN)
	7.0	inten disturante (desembro (desembro des) design (desembro de) del STITIONI essen de TDUP.
	74	#Josystem[#comploystemIndex].device[#tempedaddr.JIAI10N].eTFOT := IRDE;
	/5	<pre> #105ystem.t#temptosystem.index].device[#tempsed#ddr.51#110N].errorstate := DEv_SI#IE_F#ULL";</pre>

Je	molV	lachine → PLC_1516F [CPU 1516F-3 PN/DP] → Program blocks → Diagnostics → PullOrPlugModules [FC2083]
4	•	1
ì	-	Riock interface
	20	
	30	// evaluate diagnosis information for devices in an IO system
	31	//
	32 [<pre>File (#tempGeoAddr.AREA = #AREA_PROFINET)</pre>
	33	OR (#tempGeoAddr.AREA = #AREA_PROFIBUS)
	34	THEN
	35	
	36	//-
	38	// determine index for to system
	39 [FOR #tempindex := 1 TO "MAX SYSTEM" DO
	40 [I IF (#ioSystem[#tempindex].ioSystemId = #tempGeoAddr.IOSYSTEM)
	41	THEN
	42	<pre>#tempIoSystemIndex := #tempindex;</pre>
	43	END_IF;
	44	END_FOR;
	45	TE (Annuelle (WAY SYSTEM)
	401	If (#cempiosysteminatx <= max_sistr) ND (#temposide Status <= max_sistr)
	48	AND (#tempGeoAddr.SLOT <= "MAX MODULES DEVICE")
	49	THEN
	50	// check modules plugged
	51 (IF (#eventClass = #MODULE_PLUGGED)
	52	THEN
	53	<pre>// reset error state only if the correct module is inserted</pre>
	54 [- IF (#ratitid = #MODULE MATCHES)
	56	THEN THE PRODUCTOR
1	57	<pre>#ioSystem[#temploSystemIndex].device[#tempGeoAddr.STATION].error := FALSE;</pre>
	58	#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].slot[#tempGeoAddr.SLOT].slo
	59	
	60 [IF (#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].errorState = "DEV_STATE
	61	THEN
	62	<pre>#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.SIATION].errorState := "DEV_SIAT</pre>
	63	ELSIF (#ioSystem[#temploSystemIndex].device[#tempGeoAddr.STATION].errorState = "DEV_SI
	65	incu incustem [itemnToSystemIndex] device[itemnGoolddr STITION] errorState ·= "DEV STIT
	66	ELSE
1	67	<pre>#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].errorState := "DEV STAT</pre>
1	68	END_IF;
1	69	END_IF;
	70	
1	71	// check modules pulled
1	72	THEN (FEVENCULASS = #MODULE_PULLED)

#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].error := TRUE; #ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].error := TRUE;

#ioSystem[#tempIoSystemIndex].device[#tempGeoAddr.STATION].errorState := "DEV_STATE_FAULT";

Auto Layouting of code in SCL editor

^{T) ato} Do you know the auto layouting function of the ^{STATE} programming editor SCL? By that you're easily ^{STATE} able to beautify you're written SCL code by just ^{V_STATE} a click of a button!

TIA Tip 013

Source: TIA Portal

TIA Tip 014 – Comment out multiple program lines or sections in SCL



giDemoMachine → PLC_1516F [CPU 1516F-3 PN/DP] → Program blocks → Diagnostics → PullC	giDemoMachine PLC_1516F [CPU 1516F-3 PN/DP] Program blocks Dia	gnostics 🕨
)	· · · · · · · · · · · · · · · · · · ·	lit Cu el
36 //	36 //	
39 E FOR #tempindex := 1 TO "MAX_SYSTEM" DO 40 E IF (#ioSystem[#tempindex].ioSystemId = #tempGeoAddr.IOSYSTEM)	<pre>39 // FOR #tempindex := 1 TO "MAX_SYSTEM" DO 40 // IF (#ioSystem[#tempindex].ioSystemId_= #tempGeolddr_]</pre>	IOSVSTEM)
41 THEN 42 #tempIoSystemIndex := #tempindex;	41 // THEN 42 // #tempIoSystemIndex := #tempindex	nent out multin
43 END_IF; 44 END_FOR;	43 // END_IF; 44 // END_FOR; 45 DF COLO	am lines or so
46 D IF (#temploSystemIndex <= "MAX_SYSTEM") 47 AND (#tempGeoAddr.STATION <= "MAX_MODULES DEVICE")	46 IF (#temploSystemIndex <= "MAX_SYSTEM") 47 AND (#tempGeoAddr.STATION <= "MAX_MODULES	
48 AND (#tempGeoAddr.SLOT <= "MAX_MODULES_DEVICE") 49 THEN	48 AND (#tempGeoAddr.SLOT <= "MAX_MODULES_DESCL 49 THEN	
50 // check modules plugged 51 IF (#eventClass = #MODULE_PLUGGED)	50 // check modules plugged DUTING P	rogramming or program
52 ITEN		cases you have to laud

le ctions in

m test with SCL e out multiple program lines or complete sections. What has to be done? Just mark the lines and click the button or use the *(function.

TIA Tip 014

Source: TIA Portal

TIA Tip 015 – Use block overview for sorting and mass data operations





Use block overview for sorting and mass data operations

In case of many objects in project navigation window it's helpful to have a table view for your software objects. In the overview windows you're able hide folders and sort your objects with different criteria e.g. programming language or block type.

TIA Tip 015

Source: TIA Portal

TIA Tip 016 – Insert comments to LAD and FBD blocks

	⊒ <mark>,</mark> ≊t≊t	🖼 ± 🖃 😰 🧐 🐿	Kalinterface	si ci		_
ck title:		1	* I I ¥ I			
is a comment for the block						
Network 1: Tips & Tricks	=> Use comments					
his is a comment for the ne	etwork					
	%DB126 "InstConveyorRob ot"				%DB157 "InstConveyorEjec t"	
	%FB43 "MotorControl"				Open Open and monitor	
EN %40.0 "EnableMotorC" — enab	le	ENO %Q0.0 motor → "MotorC"	%1.0 "EnableMotorE" —	— Е — е	Define tag Rename tag Rewire tag	Ctrl+Shift+I Ctrl+Shift+T Ctrl+Shift+P
%40.1 "StartMotorC" — start %40.2 "StopMotorC" — stop			%1.1 "StartMotorE" — %11.2 "StopMotorE" —	s X	Cut Copy Paste	Ctrl+X Ctrl+C Ctrl+V
	This is a commer the call/instruction	nt for on	·	×	Delete Go to Cross-references	Del F11
				_	Change instance Update block call	
				ку	Insert network Insert STL network Insert SCL network	Ctrl+R
				E	Insert input and output	Ctrl+Shift+3



Insert comments to LAD and FBD blocks

Make your program code readable for others by the use of commenting. In graphical program languages like LAD or FBD you're able to add block comments, network titles and network comments!

TIA Tip 016

Source: TIA Portal

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TIA Tip 017 – Mass operation in Block interface



SIEMENS Ingenuity for life

Mass operation in Block interface

Interface of blocks are handled in a table view. With mouse use you're able to change or add many variables very smart and efficient. Pop up will ask whether you want to add or overwrite existing lines.

TIA Tip 017

Source: TIA Portal

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TIA Tip 018 – Surround code segments with loops or if conditions in SCL



33	
36	//=====================================
37	// determine index for IO system
38	//=====================================
39 白	[FOR #tempindex := 1 TO "MAX_SYSTEM" DO
40 白	<pre>IF (#ioSystem[#tempindex].ioSystemId = #tempGeoAddr.IOSYSTEM)</pre>
41	THEN
42	<pre>#temploSystemIndex := #tempindex;</pre>
43	END_IF;
44	END_FOR;
45	
46 🛱	IF (#temploSystemIndex <= "MAX_SYSTEM")
47	AND (#tempGeoAddr.STATION <= "MAX_MODULES_DEVICE")
48	AND (#tempGeoAddr.SLOT <= "MAX_MODULES_DEVICE")
49	THEN
50	// check modules plugged
51 🛱	<pre>IF (#eventClass = #MODULE_PLUGGED)</pre>
52	THEN
53	// reset error state only if the correct module is inserted
54 白	<pre>IF (#faultId = #MODULE_MATCHES)</pre>
55	OR (#faultId = #MODULE OK)

Surround code segments with loops or if conditions in SCL

Already written SCL code can be surrounded with loops, if conditions and so on. Just mark the lines and use the context menu.

TIA Tip 018

Source: TIA Portal

TIA Tip 027 – Details view for fast tag access





Details view for fast tag access

You want to use global tags or variables from data blocks in your program or screen? Using the details view you can drag and drop tags to several editors easily!

TIA Tip 027

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 037 – Regions in SCL

rt troo	DigiDomoMachine > PLC 1510	E [CBI 151		aram blocks	Kuka k		E DROCRAL	MING N	ER TEACH PATH (ERS210)			-
	DigiDemowachine v rEC_1510	or tero isi		gram blocks	Kuka P		E PROGIVA					
rices												
🔳 🖻 🛛	# # 🖻 ± 🛼 🗄 😫 😫 ±	😥 C° 60	偏偏三合合	= 페 펜 뭐 !	1 h 19	କାଣ ଜ	00 00	8				
	FB_TEACH_PATH											
Tack_Or_Station_Failure [^	Name	Data type	Default valu	e Retain	Accessib	le f Writa.	Visible in	. Setpoint	Supervis Comment			
DiagStartuploSystem (FB2	1 📶 🔻 Input											
DiagStartupPlc [FB2002]	2 🔄 🛚 IN_AxesGroup	Int	1	Non-ret	💌 🗹							
DiagnosticInfo [DB29]	3 📶 🕶 Output											
HmiD8 [D82081]	4 Add news											
InstDiagStartuploSystem [CASE.	FOR WHILE	100								
InstDiagStartupPic (DB200	▼ 9 SELECTED PATH AND POINT	" Of	TO DO DO 1 7									
Ea EdgeCom	· Q ACTIVE DEVICE	1	///////////////////////////////////////		///////////////////////////////////////		///////////////////////////////////////	(11111111	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
La Energy Suite - program	▼ 9 OPEN PATH	2	///////////////////////////////////////		11111111			(111111111	////// TEACH PATH ////////////////////////////////////	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
En Engloatarreparation	▼ ₽ PATH SETTINGS		//////////////////////////////////////	Y TO TELCH THE	D3.TH (/							
Constant of the second se			// YOU CAN OPEN I	AND EDIT & PAT	EALD //							
	♥ POINT DESELECTED	6	///////////////////////////////////////		minin			(11111111		/////////		
EC SIEMENS KUKA JECOD	▼ 2 DELETE POINT	7	//The Applicati	ion Examples a	re not bis	ding and	do not cla	in to be c	omplete regarding the circuits sho	wn, equipping and any event	uality.	
FR myal TOMATION TA	▼ 2 COPY PATH	8	//The Applicati	ion Examples d	o not repr	esent cus	tomer-spec	ific solut	ions. They are only intended to pr	ovide support for typical a	pplications.	
SINA PARA [FB286]	♥ Q COPY POINT	9	//You are respo	onsible for en	suring the	t the des	cribed pro	ducts are	correctly used.			
B HMI INTERFACE KUK	♥ Q COPY POINT NAMES	10	//These applica	ation examples	do not re	lieve you	of the rea	sponsibili	ty to use sound practices in appli	cation, installation, opera	tion and maintenance.	
B MACHINE [DB6001]	▼ P RESETPATH	12	//We reserve th	be application	ke changes	to these	Applicatio	on Evample	at any time without prior notice	r chose specified in the ab	ove liability clause.	
BB_ROBOT_DATA [DB6010]	▼ 2 FORWARD BACKWARD	13	//If there are	any deviation	s between	the recon	mendations	provided	in these application examples and	other Siemens publications	-	
INSTANCE_DATABLOC	▼ 및 SAVE SEGMENT	14	//e.g. Catalogs	s - the conten	ts of the	other doc	uments have	priority	×			
E 01_ROBOT_CONTROL	■ Q TEACH POSITION	15	11									
D2_JOG ROBOT	♥ SCROLLING POSSIBLE	16	//We accept no	liability for	informati	on contai	ned in this	s document				
03_SINGLE MOVEMENTS	· 안 MOVE TO A POSITION	17	//Any claims ag	gainst us - ba	sed on whi	tever leg	al reason .	- resultin	g from the use of the examples, in	formation, programs, engine	ering AND performance dat	a etc.,
04_ONLINE PROGRAMMING		19	//described in	this Applicat	z"), in cu	e shall b	ent. gross	negligenc	exclusion shall not apply in the c	the marantee for the miali	e.g. under the German pr	oduct Hability
FB_MOVE_PATH [FB53		20	//deficiency or	r breach of a	condition	which goe	s to the r	oot of the	contract ("wesentliche Vertragsof	lichten"). However, claims	arising from a breach of	a
FB_TEACH_PATH [FB5		21	//condition whi	ich goes to th	e root of	the contr	act shall	be limited	to the foreseeable damage which i	s intrinsic to the contract	, unless caused BY intent	OR gross
D5_CONFIGURATION		22	// negligence o	or based on ma	ndatory 1	ability f	or injury	of life, b	ody OR health. The above provision	s do not imply a change in	the burden of proof to yo	ur detriment.
G_GLOBAL POSITION LIST		23										
07_ERROR MESSAGES		24	// сонетните	***********								
BOB_OFFLINE PROGRAMM	· P SAVE BUTTON GREEN	26	//=================									
10_KUKA_mxAutomation		27										
11_OpenPLC_KUKA_mxA_		28										
ListFunctions		29	//									
AddLameraPosition [FC44]		30	// READ INPUT SIG	GNAL								
GetCameraPosition [FC.15]		31	//									
Istd Standard		32	#St Nove2PointFv	cute := #St M	ove2Points	xecute:						
MindApp		34										
1 PSU8600		35										
Ima Virtual Line		36	//		*******		********		*************************************			
System blocks		37	// SELECTED PATH	AND POINT								
Technology objects		38	//***************	***********	*********	*******			***************************************	automa and a second		
Energy objects		40 F	REGION SELECTED I	PATH AND POINT								
External source files		41	///////////////////////////////////////		mmm	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	// KIP900 -	- PATH ///			///	
PLC tags		42	#St_pathAnour	nt := "AMOUNT_	OF_PATHS"	//10						
🕞 PLC data types		43	#St_KTProwCou	ant_PathList :	- "AMOUNT	OF_PATHLI	ST_ROWS_KT	P"; // 1	or KTP := 7			
😡 Watch and force tables		44	#St_KTPpathPa	sgeIndex := "D	B_HMI_INTS	RFACE_KUK	A".ROBOT[#	IN_AxesGro	up].HMI_View.KTP.pathPageIndex; /	/ Which path is selected?		
🙀 Online backups 🗸 🗸		45	#St_KIP_PathF	RowIndex := "D	B_HMI_INTS	RFACE_KUK	A".ROBOT[#	IN_AxesGro	up].HMI_View.KTP.pathRowIndex;			
		11			101					> Ln: 12	48 CI: 7 INS 1009	



Regions in SCL

Structured programming in SCL is very important. With regions you're able to collapse or expand code segments very easily - you're also able to navigate between them.

TIA Tip 037

Source: TIA Portal

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TIA Tip 038 – Bookmarks in SCL

and project and the call of the	DigiDomoMachine > PIC 1516E IC		
ut uter ut	Digiberiowaciine v PEC_15101 [C		
wices			-
	t # # ∰± 4, E 2 2± 00	(m) 6 월 월 19 월 [11] 월 11] 월 11] 월 12] 4	-
	FB_TEACH_PATH		
Rack_Or_Station_Failure [A Name Dat	a type Default value Retain Accessible f Writa Visible in Setpoint Supervis Comment	
DiagStartuploSystem [F82	1 📲 🔻 Input		
DiagStartupPlc [FB2002]	2 IN_AxesGroup Int	1 Nonret 💌 🗹 🗹	
Diagnosticinto (D829)	3 d 🔻 Output		-
	4 <		
linstDiagStartupioSystem [U. COLE FOR WHILE (***) EEGON	
EdgeCom	▼ 🤋 SELECTED PATH AND POINT		
Energy Suite - program		98 END_REGION	
Energy State Program	♥ OPEN PATH	99	
En EnS -block types			
- Sa Kuka	■		
FC EXISTING ROBOTS (FC	♥ POINT DESELECTED	103 ////////////////////////////////////	
FC_SIEMENS_KUKA (FC60	♥ Q DELETE POINT	104 //	
FB_mxAUTOMATION_TIA	▼ 9 COPY PATH	105	
SINA_PARA (FB286)	▼ Q COPY POINT	106 PREGION ACTIVE DEVICE	
DB_HM_INTERFACE_KUK		107 IF "DB_HHI_INTERFACE_KUKA".ActiveDevice = 1 THEN // Active Device KTP	
DB_MACHINE [DB6001]	= ♥ PRESETPATH	100 100 #St SelectedBathInder := #St KTD SelectedBathInder:	
BB_ROBOT_DATA [DB6010]		10 435 SelectedoinEldex := 45 KTP SelectedoinEldex;	
GO_INSTANCE_DATABLOC		111	
E 01_ROBOT_CONTROL		112 "DB_HMI_INTERFACE_KUKA".ROBOT(#IM_AxesGroup).ONLINE_FROG.Status.SelectedPath_TeachPath := #St_SelectedPathIndex;	
Eg 02_JOG ROBOT	T SCROLLING POSSIBLE	113	
B 03_SINGLE MOVEMENTS		<pre>114 // #St_Actual_Point := #St_SelectedPointIndex;</pre>	
Ga 04_ONLINE PROGRAMMING		115 116 FIRTE TOR SMIT INTERFACE ZUMAT ActivaDavies = 2 THEM // Activa Davies TD	
FB_MOVE_PATH (FB53			
FB_TEACH_PATH [FB5	▼ © GETPATHLISTKTP	118 #St_SelectedPathIndex := #St_TP_SelectedPathIndex;	
• ta 05_CONFIGURATION	▼ [©] GETPATHLIST TP	119 #St_SelectedPointIndex := #St_TP_SelectedPointIndex;	
G_GLOBAL POSITION LIST	▼ 9 GETPOINTLISTKTP	120	
C7_ERROR MESSAGES	• 9 GETPOINTLISTTP	121 "DB_HMI_INTERFACE_KUKA".ROBOT(#IN_AxesGroup).OHLINE_FROG.Status.SelectedPath_TeachPath := #St_SelectedPathIndex;	
EE US_OFFLINE PROGRAMMI	♥ SAVE BUTTON GREEN	122 129 // Adm Samuel Daims - Adm CalescadDeine Tedem	
Ea 10_KUKA_mxAutomation		123 // #Sciences_contenters/	
Ea 11_OpenFLC_KOKA_mxA		125 END IF;	
AddCameraPosition IEC441		126	
DeleteCameraPosition [FC		127 // Opened Path	
GetCameraPosition (FC45)		128 IF 4St SelectedFachIndex <> 0 THEN	
LStd Standard		12 #56_reinopeneu im files	
MindApp		131 ELSE	
• 11 PSU8600		132 #St_PathOpened := False;	
🕨 📴 Virtual Line	-	133 "DB_HMI_INTERFACE_KUKA".ROBOT[#IN_AxesGroup].OHLINE_FROG.Status.Path_Name_Teach := 'Path_Name';	
System blocks		134 "DB_HMI_INTERFACE_KUKA".ROBOT(#IN_AxesGroup).ONLINE_FROG.Point := "DB_HMI_INTERFACE_KUKA".ROBOT(#IN_AxesGroup).ONLINE_FROG.Point_Default	1
Technology objects		135 "DB_HMI_INTERFACE_KOKA". ROBOT(#1N_AxeeSroup].OULINE_FROG_COmmand.Farameter_Visiable := False; 136 TRE_HUMEREFRACE_KOKA". ROBOT(#1N_AxeeSroup].OULINE_FROG_COmmand.Farameter_Visiable := False;	
Energy objects		130 UD_DN1_INIEKKALL_KNA-: NUDUI (310_AKESSFUD).ULLIE_FKNS-:COMMAN.1079E103_N0VE2POINt := 1; 137 // TSB HHI INTERFET KIKZ: SOBOTAIN Assessment) ONLINE PERG Command: GATABASTICANNO := 1;	
External source files		138 END IF:	
PLC tags		139	
Ci PLC data types		140 LEND_REGION	
Watch and force tables		141	
Online backups	~	142 //	
		Ln: 500 Cl: 5 INS 100%	

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Bookmarks in SCL

Structured programming in SCL also means to navigate efficiently during programming and testing. With bookmarks and Jump to line this is possible very fast.

TIA Tip 038

Source: TIA Portal

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TIA Tip 042 – Instruction List Pane Mode



Save project 🚍 🐰 🗎 🚡 🗙 🍋 🛨	C: 項号吧 [] 思 []	Go online 🖉 Go offline 📩 🌆 🖪 🦉 🗶 🚽 🚺 Search in projects		PO
ject tree	DigiDemoMachine > PLC_15	GF [CPU 1516F-3 PN/DP] → Program blocks → EdgeCom → DataCollector [FB1]	Instructions	
ovices			Ontions	
			aut aut in St	
		(B) C. #0 Ci A2 is A 1 4 2 2 2 2 4 1 2 4 4 Ci €. 2 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	ni ni 10 0	-
	DataCollector		✓ Favorites	
DigiDemoMachine	Name	Data type Default value Retain Accessible f Writa Visible in Setpoint Supervis Comment	I CASE FOR WHILE IS IN MECHAN	
Add new device	1 📲 🔻 Input		6 P OF TO DO DO P	
Devices & networks	2 Add new>		1	
PLC_1516F [CPU 1516F-3 PN/DP]	3 🕣 🕶 Output		4	2
Device configuration	mg ten		1	
😼 Online & diagnostics		B. OSC. TOR. WILC. (*) BEGON	A Pasis Instructions	
🤒 Safety Administration 🛛 🔒	► 및 state of CPU		· Dasic Instructions	
Software units	► 2 operating Mode		Name Description	
🝷 🙀 Program blocks	♥ EmergencyStop	3 // Andrew	Bit logic operations	
Add new block	 Q Cycletime 	4 #starReturnValue := RD SYS T(#starTime):	Go Timer operations	
4 Main [OB1]	▶ 🤋 service	S	Counter operations	
MC-Interpolator [0892]	▶ Conveyor	6 #statTimestamp := DT TO TOD(#statTime);	Comparator operations	
MC-Servo (0891)	▶ Trayhandler		Math functions	
ProgrammingError [OB121]	♥ Picker Unit	8 EREGION state of CPU	Move operations	
BullOrPlucOfModules (OB83)	Compressor	30	< II	
PackOrStationFailure (OB86)	Bohot	31 EREGION operating Mode	 Extended instructions 	_
RackOrstationFailure [0086]	P Diarar	68	Name	
Startup [08100]	· Trieces	69 EREGION Emergency Stop	maine Description	
Lightinit [FC36]	12 C	85	Date and time-or-day	
C FOB_RTG1 [OB123]		86 EREGION Cycletime	T_CONV Convert time:	s and e
Main_Safety_RTG1 [FB0]		99	T_ADD Add times	_
Main_Safety_RTG1_DB [DB56]		100 EREGION service	T_SUB Subtract time	ės –
EaMachine		125	T_DIFF Time different	ce
 Diagnostics 		126 BREGION Conveyor	T_COMBINE Combine time	es
CopyToHmiDB [FC2081]		224	< II	-
PullOrPlugModules [FC2083]		225 EREGION Trayhandler	✓ Technology	
Back Or Station Failure (F		309	Name Description	
DiaoStartunioSustem (EB2		• 310 BREGION Ficker Unit	Counting and measurem	
DiagStartupRic [583003]		311 //**********************************		
Dispersional (DB20)		312 // **********************************	Pib Control	
Diagnosticimo (DB29)			Motion Control	
HmiDB [DB2081]		316 B #Statrickeron(Values := Inst202_volue: unit:instEnaxis:instEnaxiorovy0.axistatus.iskunning,	Time-based IO	
InstDiagStartuploSystem [315 datab -> buittmachine . 20 ricter .axisi.stateon,		
InstDiagStartupPic [DB2002]		317 timestam) ·	4	
 EdgeCom 		318 CARESOND - TOUSIANESOND),		
getTimestamp [FC22]		319 F #statPickerVacuum/valueB := "Inst202 FU202", unit, inSignals, EmVacuum, VacuumStable.	<	
calcTime (FB40)		320 dataB => "BufferMachine", "202 Picker", vacuumStable,	✓ Communication	
DataCollector [FB1]		321 datatype := 0,	Name Description	_
NotTimeCriticalFunction [F		<pre>322 timestamp := #statTimestamp);</pre>	57 communication	
TimeCriticalFunction_100 [323		
TimeCriticalFunction_200 [324 d #statPickerI2T (buffer -> "CacheMachine"."202_i2t",	open user communicatu	
BufferMachine [DB112]		325 value := "InstReadMotorParameter".motorData612T,	L D WED C	
CacheMachine [DB155]		326 timestamp := #statTimestamp);	wed Server	
DataCollector DB [DB156]		327	Others	
EckAndPlace1 [DB130]		328 E IF #statPickerI2T.dome THEN	Communication processo	
Energy Suite - program		329 "BufferMachine"."202_Picker".axisY.i2t := "CacheMachine"."202_i2t";		_
Eng shock types		330 END_1F2	 Optional packages 	
E E E Construction		331	Name Description	
R Construction of the second s		334 m #Statrickeriemp(purcer => "CachesAchine", 202_Cemp",	SIMATIC Ident	
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Instruction List Pane Mode

During programming the instruction list is a good helper. If you need more space and a better overview you can deactivate the panel mode and hide column headers.

TIA Tip 042

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 043 – Quick Compare PLC blocks





Quick Compare PLC blocks

With quick compare the block compare between 2 blocks is easy by choosing the the blocks to compare via context menu in Project navigation view.

TIA Tip 043

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 044 – Block Compare with filter





Block Compare with filter

With filters for source and target data in block compare editor it's easy to detect the relevant code changes

TIA Tip 044

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 045 1/2 – Set program network title automatically





Set program network title automatically

By activating this option network titles will automatically assigned with the comment of the 1st operand in a network.

TIA Tip 045

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 045 2/2 – Set program network title automatically



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PLC programming General GRAPH LAD/FBD (Ladder / Function STL (Statement list) SCL (Structured Control Lan STEP 7 Safety	Default settings for new blo	Cks ☐ IEC check for code blocks ☑ Set "DB accessible from OPC UA" for new data blocks ☐ Set instance data block elements with access type "Standard" to retentive (S7-1200/S7-1500)	
 Simulation Online & diagnostics PLC alarms Visualization Keyboard shortcuts Password providers Multiuser 	Additional settings	Set network title automatically Show autocomplete list International	

Set program network title automatically

By activating this option network titles will automatically assigned with the comment of the 1st operand in a network.

TIA Tip 045

Source: TIA Portal

TIA Tip 046 1/2 – Overlaying tags with AT construct



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MC-Interpolator [OB92]		11 T Constant													
MC-Serve (OB91)		12 Add news													
Array [FB2]															
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Array DB [DB3]		Comment													
HideShowParameter_DB [DB4]			4												
Lamo DB [DB1]		Network 1: Call MoveVend	icity												
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External source files															
PLC tags															
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Overlaying tags with AT construct

Addressing parts of an variable or use pattern to overlay data segments is possible with the AT construct. It helps to have another view on data.

TIA Tip 046

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 046 2/2 – Overlaying tags with AT construct



Q.	PLC_1 [CPU 151	5-2 PN]	Program blo	cks ▶ Motor_1[FB	1] _	7 -	×)	→ PLC_1 [CPU 1515-2 Pł	N] 🕨 Program bloc	:ks ▶ Motor [D	B1]	_ 🗗 🖬 ×
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Overlaying tags with AT construct

Addressing parts of an variable or use pattern to overlay data segments is possible with the AT construct. It helps to have another view on data.

TIA Tip 046

Source: TIA Portal

TIA Tip 047 1/2 – Use of predefined standard PROFIDRIVE telegrams



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Program blocks	8 Add news										Math functions	V1.0	
Technology objects	9 - Temp										Move operations	<u>V2.4</u>	
Energy objects	10 • <add new=""></add>										Conversion operations		
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											 Module parameter assig. 	V1.2	
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and Program into											Diagnostics	V1.7	
PLC supervisions & alarms											Recipe and data logging	V1.3	
PLC alarm text lists											Data block control	V1.3	
Local modules											Addressing	V1.3	
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Common data											Motion Control	<u>V5.0</u>	
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Use of predefined standard **PROFIDRIVE** telegrams

SINAMICS drives are using standard Profidrive telegrams. They are integrated part of the TIA Portal installation as UDT. Name of UDTs: "PD_Tel..."

TIA Tip 047

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 047 2/2 – Use of predefined standard PROFIDRIVE telegrams



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PD_MELDW		6		•	Static									
PD_STW1		7		•	SpeedAxis_1_Actor_I	PD_TEL105			Non-retain		~			
PD_STW1_611UMode		2		•	<add new=""></add>									
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Use of predefined standard PROFIDRIVE

telegrams

SINAMICS drives are using standard Profidrive telegrams. They are integrated part of the TIA Portal installation as UDT. Name of UDTs: "PD_Tel..."

TIA Tip 047

Source: TIA Portal

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TIA Tip 048 1/2 – Hide parameters at Block calls





Hide parameters at Block calls

To hide optional parameters and make block calls clearly represented just active the function and select for each parameter the corresponding option "Hide".



Source: TIA Portal

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TIA Tip 048 2/2 – Hide parameters at Block calls





TIA Tip 048

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 049 1/2 – Predefined parameters at block interface



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Predefined parameters at block interface

Define a global tag in block interface to automatically add actual parameters at the block call. An error appears If the symbolic name does not exist.

TIA Tip 049

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 049 2/2 – Predefined parameters at block interface





Predefined parameters at block interface

Define a global tag in block interface to automatically add actual parameters at the block call. An error appears If the symbolic name does not exist.

TIA Tip 049

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 050 – Slice access to variables



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#	Data.%X3 #ClockBy	te.%X2			#Lamp					
					-()					
					• •					

Slice access to variables

With slice access it's easy to address Bits or Bytes of bigger data types like DWord or DINT. Just use e.g. the syntax .%X2 or .%B0

_TIA Tip 050

Source: TIA Portal

TIA Tip 051 – Flexible Array limits at Block interface



TipsAndTricks PLC_1 [CP	U 1515-2 PN] → Program bloc	ks 🕨 Array [FB2]				_ • •	i X	⊒ TipsAn	dTricks ► PLC	_1 [CPU 1515-2 PN]	Program blocks	▶ Ma
å KX 말 관 🔍 🖿 🚍 [Array	୭ ª ± 월 ± 별 😥 🥙	🕻 😳 🖑 🗺 😌 🛛	¢≡ '≡ %≡	६ ७ 🗞	201	E	4	ക്ക്⊉് Main	🕸 🖻 ± 🗐 🗤	E E E 🗩 3±	@* '@* 🖻 😥	¢≎ (
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IF CASE FOR WHILE (**) REGION Block title: Network 1: ArrayDimension Comment	5							Block tit	Ie: "Main Progra ork 1: Motor ork 2: IO-Array	m Sweep (Cycle)*	J	
1 #S FirstDimensionLot #S FirstDimensionUp 3 #S SecondDimensionUr 4 #S SecondDimensionUr	<pre>v := LOWER BOUND(ARR := #InO := UPPER BOUND(ARR := #InOu w := LOWER BOUND(ARR := #InO := UPPER BOUND(ARR := #InO</pre>	ttArray, DIM := 1 CArray, DIM := 1 DutArray, DIM := 1 ItArray, DIM := 2	1); 2); 2); 1)	#S_FirstDim #S_FirstDim #S_SecondDi #S SecondDi UPPER_BOUND	ensionLo ensionUp mensionI mensionU	w () bow 2 Jp	0 1 2 8 8	Comme	ent	%DB3 "Array_DB" %FB2 "Array"		
									#Array — Ind	l OutArray	ENO	

Flexible Array limits at Block interface

With Array[*] it's very flexible to realize generous blocks with flexible array dimensions. Array dimensions are able to detect with LOWER_BOUND and UPPER_BOUND

TIA Tip 051

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 053 – Monitor complex data types at block call



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me				
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Devices & networks		Comment	ERROR STOP	
▼ 1 PLC_1 [CPU 1515-2 PN]	2			
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👻 🔀 PLC data types	•			
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Distributed I/O	~	Device information Connection Information Alarm display Monitor value	✓ Call hierarchy	
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Common data		You have either selected an object that is not supported or the program status is not enabled.		
Documentation settings				
Languages & resources				
Version control interface				
Online access				
Gard Reader/USB memory				
-				
			No call path availa	able

Monitor complex data types at block call

Efficient programming leads to complex data types at block calls. With the monitor tab in the inspector windows you're able to test the values easily

TIA Tip 053

Source: TIA Portal

Unrestricted © Siemens 2020

TIA Tip 057 – Calculation with index variables



Calculation with index variables

Complex calculations can be done in every programming language based on Index variables and loops. An example for iterative calculaton of Fibonacci numbers.



Source: TIA Portal

Navigation



1	Handle t	the surface	and windows

2 Configure Hardware and Network

3 Program PLCs

4 Project HMIs

5 Work with libraries
TIA Tip 020 – Select objects from same type in WinCC





Select objects from same type in WinCC

Let's start with some tips for WinCC Visualization. You want to select all objects with the same type on a HMI screen, e.g. all rectangles or buttons? Just select one of them, hit the keyboard shortcut <CTRL> + <Shift> + <A> and all objects from the same type will be selected!

TIA Tip 020

Source: TIA Portal

TIA Tip 021 – Select overlapping objects in HMI screens



roject3 → HMI_1 [T	[P700 Comfort] → Screens → 04_Select	Objects		1.2	
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4_SelectObjects [S	creen]	🔍 Propo	erties	1 Info	B Diagnostics
Properties An	imations Events Texts				
Property list	General				
General Layers	Pattern Name: 04 Selecto	biects	Tool	tip	
	Background color: 182, 18 Grid color: 0, 0, 0	2,182 -			
	Number: 2				

Select overlapping objects in HMI screens

With the shortcut <ALT> + <Mouse click Left> the selection of overlapping objects will be changed. With each <Click> the selection changes. By this you can also access the object in the lowest level or levels in between without the need to move any objects or search for them in the layers tab.



Source: TIA Portal

TIA Tip 022 – Copy & Paste of Objects in HMI screens





Copy & Paste of Objects in HMI screens

If you want to add several objects with similar space you can easily use the copy & paste logic on a screen editor. Just copy & paste, move the first copy to the desired position and repeat pasting. The objects will be automatically aligned with the same offset related to the last copy.

TIA Tip 022

Source: TIA Portal

TIA Tip 028 – Change colors of HMI objects





Change colors of HMI objects

Efficiently change a lot of HMI objects within WinCC? By this editor you're able to harmonize colors as well as search and replace them.

TIA Tip 028

Source: TIA Portal

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Navigation



1	Handle	the	surface	and	windows

2 Configure Hardware and Network

3 Program PLCs

4 Project HMIs

5 Work with libraries

TIA Tip 023 – Show information about project and library history





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Show information about project and library history

TIA Portal saves a Project and Global Library history automatically. Select properties of the Project in project navigation view or the Global library in Libraries tab and choose <Properties> via context menu and then <General>, <Project/Library history>.

TIA Tip 023

Source: TIA Portal

TIA Tip 024 – Open Global libraries Read-only



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TIA Tip 024

Source: TIA Portal

TIA Tip 025 – Create protected libraries







Create protected libraries

It is possible to export Global libraries with write protection. Objects of protected libraries cannot be edited or changed at all. Protected block types are useful to control the programming standards within your company or automation team. Take care to save the unprotected library because the protection cannot be removed at a later time.

TIA Tip 025

Source: TIA Portal

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TIA Tip 058 – Element view of library

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Element view of library

A multiple selection of objects can be copied in the library as one object. With the element view of the library the single objects are visible.



Source: TIA Portal

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TIA Tip 059 – Filtering master copies in library



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HW of original project

Project library

Types
 Master copies

Filtering master copies in library

Different types of objects can be copied to the library. With the filtering function it's easier to find the matching components you're searching for.

TIA Tip 059

Source: TIA Portal

TIA Tip 060 – Info view of library

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Info view of library

The info view in the library combines both filtering and element view in one editor to show relevant information of library objects.

TIA Tip 060

Source: TIA Portal

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