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NEWS

Configuring Logging for SIMATIC WinCC Unified Systems

Unified Comfort Panel / WinCC Unified Runtime PC / V17 / Logging

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Table of Contents

1.1 Overview 1.2 Principle of O 1.2.1 Available Data 1.2.1 Available Data 1.2.1 Overview 1.2.1 Overview	eration	10 10 11 12 12 12 12 12 12 12 12 12
1.2 Principle of O 1.2.1 Available Data 1.2.1 Ove 1.2.1.2 Data 1.2.1 Ove 1.2.1.2 Data 1.2.2 Log Types 1.2.2.1 Ove 1.2.2.2 Tag 1.2.2.3 Alar 1.2.2.4 Log 1.2.3 Log Storage I 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.6 Interaction Be 1.2.7 Log alarm 1.2.8 Log alarm 1.2.9 Show Logs 1.2.9.1 Con 1.2.10 Available Syst 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1.1 Configuring Log 2.1.3 Creating a Log 2.1.3	eration base Types	10 11 11 11 11 11 11 11 11 11
1.2.1 Available Data 1.2.1.1 Ove 1.2.1.2 Data 1.2.1.2 Data 1.2.1.2 Data 1.2.2 Log Types 1.2.2.1 Ove 1.2.2.2 Tag 1.2.2.3 Alar 1.2.2.4 Log 1.2.3 Log Storage I 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.8 Log alarm 1.2.9 Show Logs 1.2.9 Show Logs	base Types	10 11 11 11 12 12 12 12 12 12 12
1.2.1.1 Ove 1.2.1.2 Data 1.2.1.2 Data 1.2.2 Log Types 1.2.2.1 Ove 1.2.2.2 Tag 1.2.2.3 Alar 1.2.2.4 Log 1.2.3 Log Storage I 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.7 Log Jaarm 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.9.3 Con 1.2.10 Available Systi 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1.1 Configuring R 2.1.1 Configuring Log	view	10 11 11 11 11 12 12 13 14 14 14 14 14 14 14 14 14 14
1.2.1.2 Data 1.2.2 Log Types 1.2.2.1 Ove 1.2.2.2 Tag 1.2.2.3 Alar 1.2.2.4 Log 1.2.3 Log Storage I 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.9 Show Logs 1.2.9 Show Logs	base Types in the WinCC Unified System Log	10 11 11 12 12 14 14 14 14 14 14 14 14 14 14
1.2.2 Log Types 1.2.2.1 Ove 1.2.2.2 Tag 1.2.2.3 Alar 1.2.2.4 Log 1.2.3 Log Storage I 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.7 Log Jarm 1.2.7 Log alarm 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.10 Available Syst 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1.1 Configuring R 2.1.1.2 Con 2.1.3 Creating a Lo 2.1.3	view	10 10 11 12 12 18 18 18 22 22 22 22 22 22 22 22 22 22 22 22 22
1.2.2.1 Ove 1.2.2.2 Tag 1.2.2.3 Alar 1.2.2.4 Log 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.7 Log Tag 1.2.7 Log Tag 1.2.7 Log Tag 1.2.7 Log Jarm 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.9.1 Con 1.2.10 Available Syst 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1.1 Configuring Log	view	10 10 11 12 12 18 18 18 22 22 22 22 22 22 22 22 22 22 22 22 22
1.2.2.2 Tag 1.2.2.3 Alar 1.2.2.4 Log 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.6 Interaction Be 1.2.7 Log Tag	Log n Log Properties evice/Directory ure of Logs Jnified Configuration" ween Runtime Settings & WinCC Unified Configuration erties ing Modes rol "Trend Control" rol "Alarm Control" em Functions Sc_TimeStamp" Conversion	10 10 11 12 12 18 18 22 22 22 22 22 22 22 22 22 2
1.2.2.3 Alar 1.2.2.4 Log 1.2.3 Log Storage I 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9 Con 1.2.10 Available Syst 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I Engineering	n Log Properties evice/Directory ure of Logs Jnified Configuration" ween Runtime Settings & WinCC Unified Configuration erties ing Modes rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion Jsed	10 10 11 12 12 12 18 18 22 22 22 22 22 22 22 22 22 2
1.2.2.4 Log 1.2.3 Log Storage I 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.7 Log Tag 1.2.7 Log Tag 1.2.7 Log Tag 1.2.7 Log alarm 1.2.7 Log alarm 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9 Con 1.2.9 Con 1.2.9 Components I 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1.1 Configuring R 2.1.1.2 Con 2.1.3 Creating a Log 2.1.3 Creating a Log 2.1.3 Configuring Log 2.1.3 Con 2.1.3 Con 2.1.4 Configuring a Log 2.1.5 Displaying a L 2.1.5.1 Disp	Properties evice/Directory ure of Logs Jnified Configuration" ween Runtime Settings & WinCC Unified Configuration erties ing Modes rol "Trend Control" rol "Alarm Control" em Functions STimeStamp" Conversion Jsed	
1.2.3 Log Storage I 1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.7 Log Tag 1.2.7 Log alarm 1.2.7 Log alarm 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.10 Available Syst 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1.1 Configuring R 2.1.1.2 Con 2.1.1 Configuring Log 2.1.3 Creating a Log 2.1.3.1 Con 2.1.3.2 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.5.2 Displaying a Log 2.1.5.1 Displaying a Log 2.1.5.2 Disp	evice/Directory ure of Logs Jnified Configuration" ween Runtime Settings & WinCC Unified Configuration erties ing Modes rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion Jsed	10 11 12 12 18 18 18 22 22 22 22 22 22 22 22 22 2
1.2.4 Storage Struct 1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.7.1 Prop 1.2.7.2 Log 1.2.7 Log alarm 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.10 Available Syst 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1 Configuring R 2.1.1.1 Engineering 2.1.1 Configuring Log 2.1.1.3 Con 2.1.2 Configuring Log 2.1.3.1 Con 2.1.3.2 Con 2.1.3.4 Integ 2.1.4.1 Con 2.1.5.2 Displaying a Log 2.1.5.1 Displaying a Log 2.1.5.2 Disp	ure of Logs Inified Configuration" ween Runtime Settings & WinCC Unified Configuration erties ing Modes rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion Jsed	
1.2.5 Tool "WinCC 1.2.6 Interaction Be 1.2.7 Log Tag 1.2.7.1 Prop 1.2.7.2 Log 1.2.7 Log alarm 1.2.7 Log alarm 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.9.2 Con 1.2.10 Available Syst 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1.1 Configuring R 2.1.1.2 Con 2.1.1 Configuring Log 2.1.3 Creating a Log 2.1.3.1 Con 2.1.3.2 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.5.2 Displaying a Log 2.1.5.1 Displaying a Log	Unified Configuration" ween Runtime Settings & WinCC Unified Configuration erties ing Modes rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion	11 12 18 18 18 22 22 22 22 22 22 22 22 22 2
1.2.6 Interaction Be 1.2.7 Log Tag 1.2.7.1 Prop 1.2.7.2 Log 1.2.8 Log alarm 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.9.2 Con 1.2.9.1 Scipts 1.2.9.2 Con 1.2.10 Available Syst 1.2.11 Scripts	ween Runtime Settings & WinCC Unified Configuration erties ing Modes rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion	12 18 18 22 22 23 24 24 25 26 26 27 29 29 20 29 20 20 20 20 20 20 20 20 20 20
1.2.7 Log Tag 1.2.7.1 Prop 1.2.7.2 Log 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9.2 Con 1.2.10 Available Sys 1.2.11 Scripts	erties ing Modes rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion	18 18 22 23 23 24 25 26 26 27 27 27 29 29 29 29 29 29 29 29 29 29
1.2.7.1 Project 1.2.8 Log alarm 1.2.9 Show Logs 1.2.9 Con 1.2.10 Available System 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I Engineering 2.1 2.1 Project Engine 2.1.1 Configuring R 2.1.1.1 Ena 2.1.2 Configuring Log 2.1.3 Creating a Log 2.1.3 Creating a Log 2.1.3 Creating a Log 2.1.3 Configuring Log 2.1.3 Con 2.1.3 Con 2.1.3 Con 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5.1 Displaying a Log 2.1.5.2 Disp	rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion	22 22 22 22 23 24 24 24 24 24 24 24 24 24 24 24 24 24
1.2.8 Log alarm 1.2.9 Show Logs 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.10 Available Sys 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1 Configuring R 2.1.1 Configuring Log 2.1.3 Creating a Log 2.1.3 Configuring Log 2.1.3 Creating a Log 2.1.3 Configuring Log 2.1.3 Con 2.1.4 Configuring a Log 2.1.4 Configuring a Log 2.1.4 Configuring a Log 2.1.4 Configuring a Log 2.1.5 Displaying a Log 2.1.5 Disp 2.1.5 <td>rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion</td> <td>22 23 23 24 24 25 25 25 26 26 26 27 27 27 29</td>	rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion	22 23 23 24 24 25 25 25 26 26 26 27 27 27 29
1.2.0 Log alarmining 1.2.9 Show Logs 1.2.9.1 Con 1.2.9.2 Con 1.2.10 Available Sys 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1 Project Engine 2.1.1 Configuring R 2.1.1 Configuring Log 2.1.2 Configuring Log 2.1.3 Creating a Log 2.1.3 Creating a Log 2.1.3 Creating a Log 2.1.3 Configuring Log 2.1.3 Configuring a Log 2.1.3 Configuring a Log 2.1.3 Cong 2.1.4 Configuring a Log 2.1.3.1 Con 2.1.3.2 Con 2.1.3.4 Integ 2.1.4 Configuring a Log 2.1.5.1 Displaying a Log 2.1.5.2 Disp	rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion	22 22 22 24 25 25 26 26 26 27 27 27 29
1.2.9 Show Logs 1.2.9.1 Con 1.2.10 Available Sys 1.2.11 Scripts 1.2.12 Timestamp "p 1.3 Components I 2.1 Project Engine 2.1.1 Configuring R 2.1.1 Configuring Log 2.1.2 Configuring Log 2.1.3 Creating a Log 2.1.3 Creating a Log 2.1.3.1 Con 2.1.3.2 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.5.1 Displaying a Log 2.1.3.2 Con 2.1.3.4 Integ	rol "Trend Control" rol "Alarm Control" em Functions c_TimeStamp" Conversion Jsed	22 24 25 26 26 26 27 27 29
1.2.9.2Con1.2.10Available Syst1.2.11Scripts1.2.12Timestamp "p1.3Components IEngineeringImage: Script S	rol "Alarm Control" em Functions <_TimeStamp" Conversion	
1.2.10Available Sys1.2.11Scripts1.2.12Timestamp "p1.3Components I2.1Project Engine2.1Project Engine2.1.1Configuring R2.1.1.1Ena2.1.2Configuring Lo2.1.3Creating a Lo2.1.3.1Con2.1.3.2Con2.1.3.4Integ2.1.4Configuring a2.1.5Displaying a L2.1.5Displaying a L2.1.5.2Disp	TimeStamp" Conversion	
1.2.11Scripts1.2.12Timestamp "p1.3Components I2.1Project Engine2.1Configuring R2.1.1Configuring R2.1.1.2Configuring Lo2.1.3Creating a Lo2.1.3Creating a Lo2.1.3Configuring Lo2.1.4Configuring a2.1.4Configuring a2.1.5Displaying a L2.1.5Displaying a L2.1.5Displ	TimeStamp" Conversion	2 20 27
1.2.12Timestamp "p1.3Components IEngineeringImage: Configuring R2.1Project Engine2.1Configuring R2.1.1Configuring R2.1.1.2Con2.1.2Configuring Lo2.1.3Creating a Log2.1.3Creating a Log2.1.3.4Integ2.1.4Configuring a2.1.4.1Con2.1.5Displaying a L2.1.5.1Disp2.1.5.2Disp	c_TimeStamp" Conversion Jsed	20 27 2 5
1.3ComponentsEngineering	 Jsed	27
Engineering2.1Project Engine2.1.1Configuring R2.1.1Configuring R2.1.1.2Con2.1.2Configuring Lo2.1.3Creating a Loo2.1.3Creating a Loo2.1.3Creating a Loo2.1.3Creating a Loo2.1.3.1Con2.1.3.2Con2.1.3.4Integ2.1.4Configuring a2.1.4.1Con2.1.5Displaying a Loo2.1.5Displaying a Loo2.1.5Displaying a Loo	/3eu	
2.1 Project Engine 2.1.1 Configuring R 2.1.1 Engine 2.1.2 Configuring Log 2.1.3 Creating a Log 2.1.3.1 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.5 Displaying a Log 2.1.5.1 Disp 2.1.5.2 Disp		
2.1 Project Engine 2.1.1 Configuring R 2.1.1 Ena 2.1.1 Ena 2.1.1.1 Ena 2.1.1.2 Con 2.1.2 Configuring Lo 2.1.3 Creating a Lo 2.1.3.1 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.5.1 Displaying a L 2.1.5.2 Disp		
2.1.1 Configuring R 2.1.1 Ena 2.1.1.1 Ena 2.1.1.2 Con 2.1.1.3 Con 2.1.2 Configuring Lo 2.1.3 Creating a Lo 2.1.3 Creating a Lo 2.1.3.1 Con 2.1.3.2 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5.1 Disp 2.1.5.2 Disp	ering / Configuration	29
2.1.1.1 Ena 2.1.1.2 Con 2.1.1.3 Con 2.1.3 Configuring Lo 2.1.3 Creating a Lo 2.1.3.1 Con 2.1.3.2 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5.1 Disp 2.1.5.2 Disp	intime Settings	
2.1.1.2 Con 2.1.2 Configuring Lo 2.1.3 Creating a Lo 2.1.3 Creating a Lo 2.1.3.1 Con 2.1.3.2 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5.1 Disp 2.1.5.2 Disp	Ding Logging Languages	
2.1.1.3 Con 2.1.2 Configuring L 2.1.3 Creating a Lo 2.1.3.1 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5.1 Displaying a L 2.1.5.2 Disp	Iguring a Database Type	31
2.1.2 Configuring Ling 2.1.3 Creating a Lo 2.1.3.1 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.5.1 Displaying a Lo 2.1.5.2 Disp 2.1.5.2 Disp	guring Storage Locations for the Main Databases	32 26
2.1.3 Creating a Lo 2.1.3.1 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5.1 Disp 2.1.5.2 Disp	g Settings with whice onlined configuration	30 10
2.1.3.1 Con 2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5 Displaying a L 2.1.5.1 Disp 2.1.5.2 Disp	iaurina a Taa Loa	40 ۸۲
2.1.3.2 Con 2.1.3.3 Con 2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5 Displaying a L 2.1.5.1 Disp 2.1.5.2 Disp	iguring a Tay Log	τC Δ
2.1.3.4 Integ 2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5.1 Displaying a L 2.1.5.1 Disp 2.1.5.2 Disp	iguring all Alam Log	
2.1.4 Configuring a 2.1.4.1 Con 2.1.4.2 Con 2.1.5 Displaying a L 2.1.5.1 Disp 2.1.5.2 Disp	rating a Log Backup	47
2.1.4.1 Con 2.1.4.2 Con 2.1.5 Displaying a L 2.1.5.1 Disp 2.1.5.2 Disp	_og Tag/Alarm	
2.1.4.2 Con 2.1.5 Displaying a L 2.1.5.1 Disp 2.1.5.2 Disp	iguring a Log Tag	49
2.1.5 Displaying a L 2.1.5.1 Disp 2.1.5.2 Disp	iguring a Log Alarm	53
2.1.5.1 Disp 2.1.5.2 Disp	og in Runtime	58
2.1.5.2 Disp	aying a Tag Log	55
	aying the Alarm Log	59
2.1.6 Exporting a Lo	g as a *.csv File	64
2.1.6.1 Usir	g Code Snippets	64
2.1.6.2 Auto	matic Export	68
2.1.6.3 Con		70
2.2 Operation	rert a Timestamp in Excel	73
2.2.1 Displaying/An	vert a Timestamp in Excel	73
2.2.2 Loading/Filter	vert a Timestamp in Excel alyzing Log Tags in Trend Control	75
2.3 Troubleshooti	vert a Timestamp in Excel alyzing Log Tags in Trend Control ng Log Alarms in Alarm Display	

	2.3.1 2.3.2	Using RTIL Trace Viewer7 Check necessary Permissions for the Log Directory7	7 9
3	Useful	Information8	2
	3.1 3.1.1 3.1.2 3.1.3 3.1.3 3.1.4	Fundamentals8Licensing8Log/Log Segment Size83.1.2.1Overview83.1.2.2Tag logging83.1.2.3Alarm Logging8SQLite vs. Microsoft SQL Server8Performance Features8	2233457
	3.2 3.2.1 3.2.2 3.2.3	Tips & Tricks for Log Configuration 8 General 8 Configuration 8 Log/Log Segment Size 8	8 8 9 9
	3.3 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5	Access via "DB Browser for SQLite"	0 0 1 5 7 97
	3.4 3.4.1 3.4.2 3.4.3	Access via the "Microsoft SQL Server Management Studio"	1 1 1 2
4	Appen	dix10	3
	4.1	Service and support10	3
	4.2	Industry Mall10	4
	4.3	Links and literature10	5
	4.4	Change documentation10	6

1 Introduction

1.1 Overview

SIMATIC WinCC Unified is the new visualization system with which you can successfully master the challenges of digitalization in machine and system engineering. State-of-the-art hardware and software technologies make this possible now and in the future. Tried and tested engineering in the TIA Portal, the latest web technology, and high performance reserves for the coming year combine with the freedom to implement your ideas how you want.

The SIMATIC WinCC Unified System offers the possibility to log tags and alarms in a file-based or server-based manner.





This application example shows you how logging works in WinCC Unified, when to use which type of logging, and how to configure the necessary settings.

File-based logging

File-based logging is limited in performance and is generally used for logging small amounts of data over defined periods of time.

Server-based logging

Server-based logging takes place in a high-performance database log and is used at the SCADA level to store and analyze a large number of tags and alarms über einen längeren Zeitraum.

This enables data logging in accordance with industrial requirements or legal specifications (e.g., for 10 years).

Note

For server-based logging, the fee-based SCADA option "WinCC Unified Database Option" with an associated license is required on the Unified Runtime server.

After installation, file-based logging is no longer possible.

1.2 Principle of Operation

1.2.1 Available Database Types

1.2.1.1 Overview

The logs are saved in log databases. The database types "SQLite" and "Microsoft SQL Server" are available for this:

- <u>File-based</u>: SQLite
- <u>Server-based</u>: Microsoft SQL Server

Figure 1-2



SQLite is for logging smaller amounts of data in the machine-oriented field. Microsoft SQL Server is used for logging and processing large amounts of data.

There are differences between the two database types in the availability for different WinCC Unified systems, number of possible logging tags, performance, and access possibilities.

1.2.1.2 Database Types in the WinCC Unified System

Unified Comfort Panel

Database types:	SQLite (*.db3 - SQLite Database)			
Max. number of logging tags:	Max. 5000 logging tags (no license required)			
WinCC Unified Runtime PC				

 Database types: 	SQLite (*.db3 - SQLite Database)				
	Microsoft SQL Server (*.mdf -SQL Server Database)				
Max. number of logging tags:	Scalable up to max. number of PowerTags via the "WinCC Unified Logging Tags" license				
	Additional license for MS SQL Server required				

1.2.2 Log Types

1.2.2.1 Overview

Logs are used to store and log process data and alarms. There are two types of logs:

- Tag Log Logging of process data according to defined triggers with a timestamp
- Alarm Log Logging of alarms according to alarm class and alarm status with a timestamp

Note Availability of logs

Logs should also be saved when Runtime is terminated and the device is switched off (e.g., manually or via a script).

You can export logs to a storage device and, therefore, transfer them to a device of your choice. This means that they can still be read even in the event of a device failure.

1.2.2.2 Tag Log

In a tag log, historical data records of log tags are stored, depending on the trigger set. A data record includes the following data:

- Name of the log tag
- Tag value at trigger time
- Timestamp of trigger time

Display a tag log via the "Trend control" Control in Runtime.

1.2.2.3 Alarm Log

In an alarm log, historical data records of log alarms are stored based on the trigger set. A data record includes the following data:

- Message number
- Alarm class
- Message status
- Message text at trigger time
- Timestamp of trigger time

You can display an alarm log via the "Message display" Control in Runtime.

Multilingual logged alarm texts

You can log the alarm texts for a log alarm in several languages. By default, the WinCC Unified System logs only one language (start language) to save memory space. Enable the language under "Runtime Settings > Language & Font".

1.2.2.4 Log Properties

Figure 1-3



A tag/alarm log consists of several log segments described one after the other. If the segment size or segment time period is reached, the system writes to the next log segment. When the last segment of the log is reached, the 1st segment is deleted and rewritten.

In the log properties, you can define the parameters for the log, the log segment, and for the backup.

Log parameter

You can define the following parameters:

- Name (must be unique throughout the project)
- Storage device/directory (see Section <u>1.2.3</u>)
 → may differ from storage device/directory main databases
- Time period log
- Maximum log size (MB) (depending on storage device)

Log segment parameter

You can define the following parameters:

- Time period of individual segment
- Maximum segment size (MB) (depending on storage device)
- Start time segment

Backup parameter

With the database type "Microsoft SQL Server", you have the possibility to activate an automatic backup of the database.

You can define the following parameters:

- Backup mode:
 - No backup: Backup disabled
 - Path: Backup enabled
- Path: Directory for backup

Log/segment sizes

Hints for estimating log/segment sizes can be found in Section 3.1.2.

1.2.3 Log Storage Device/Directory

In the Runtime settings of the Operator Panel configuration, the storage location for the main database of the tag and alarm logs can be defined. You can define the storage locations for the individual databases of the tag and alarm logs via the associated log settings.

Depending on the WinCC Unified System, you can select different storage devices for the individual databases.

Unified Comfort Panel

The following storage devices/directories can be selected for the Unified Comfort Panel:

- Off: Logging disabled
- SD-X51: SD card inserted in SD card slot DATA "X51"
 - Folder: Storage directory on storage device
- USB-X61: USB storage device connected to USB interface "X61"
 - Folder: Storage directory on storage device
- USB-X62: USB storage device connected to USB interface "X62"
 - Folder: Storage directory on storage device

Note SIMATIC HMI SD card for logging

For logging, it is recommended to use a SIMATIC HMI SD Card with \geq 2GB. This is designed for the logging cycles of WinCC Unified and features zero voltage protection in the event of a power failure.

WinCC Unified Runtime PC

The following storage devices/directories can be selected for the WinCC Unified Runtime PC:

- Off: Logging disabled
 - Local: Locally defined storage device
 - Folder: Storage directory on storage device
- Default: Directory defined via WinCC Unified Configuration Manager
- Project folder: Storage location of the Runtime project

Note Storage location of the Runtime project

The Runtime project is stored in the directory "C:\ProgramData\SCADAProjects".

The "ProgramData" directory is hidden by default. You can display this permanently via the menu "View > Hidden items" in the File Explorer.

1.2.4 Storage Structure of Logs

Figure 1-4



Structure

The structure of the WinCC Unified Log consists of the two main databases for tag and alarm logs as well as the individual, configured logs consisting of the log segments.

Main databases

The main databases contain the configuration data for all created tag/alarm logs. The storage location for the main databases is defined in the Runtime settings of the Operator Panel configuration.

Logs/log segments

A log contains the actual log data and consists of several segments. You can define the number and size of a log/segment via the configuration of the respective log/segment.

1.2.5 Tool "WinCC Unified Configuration"





The "WinCC Unified Configuration" tool is used to parameterize central properties of the WinCC Unified Runtime Simulation/PC. You can configure settings for the following subjects:

- Certificate management
- User Administration
- Log Settings
- Secure download

The tool appears at the beginning of the installation of WinCC Unified Runtime Simulation/PC. It can be opened and run at any time after installation.

Log Settings





1.2.6 Interaction Between Runtime Settings & WinCC Unified Configuration

Via the tool "WinCC Unified Configuration" and the Runtime settings during configuration, you can define the storage directories for the main databases of the logs and the log databases of the WinCC Unified Runtime Simulation/PC.

Depending on the settings, the main databases and the log databases are stored in different storage locations. The different possibilities are listed below.

Option 1

- Storage device log:
 - Storage directory:
- Main database storage device: Folder:

Standard Main database directory

Standard

Storage for the log databases as defined in the WinCC Unified Configuration Manager

Figure 1-7



- Storage device log:
 - Storage directory:
- Main database storage device:
 - Project folder:

Figure 1-8

Standard Main database directory Project folder "C:\ProgramData\SCADAProjects"



Log settings not relevant

- Storage device log:
 - Storage directory:
- Main database storage device:
 - <u>Folder</u>:

Figure 1-9

Standard Main database directory Local Local directory (e.g., "E:\UnifiedLog")



Log settings not relevant

The default

< Back

Next >

Figure 1-10

- Log storage device:
 - Storage directory:
- Main database storage device:
 - Folder:

Local

Local directory (e.g., "E:\Log_A")

Standard

Storage for the log databases as defined in the WinCC Unified Configuration Manager

Log Properties Segments General Log Name: Variablenarchiv_1 Storage medium: Local • Storage directory: E:\Log_A Log time period: 7.00:00 Maximum log size (MB): 1000 Local directory Log (e.g., "E:\Log_A") **Runtime settings** Main database location for tag logging Storage medium: Default -Folder: ned in the WinCC Unified - Configuration Tool Log Settings WinCC Unified - Configuration SIEMENS Totally Integrated Automation Location of archive databases and SQL server settings Keep the existing configuration Certificate management Storage location of log databases Location of the archive databases. User administration Main database D:\UnifiedArchive Drive with the most free Browse Archive settings (e.g., "D:\UnifiedLog") We recommend that you use a different hard disk than the one with the Windows installation in order to optimize performance under higher loads Reporting Secure download Main database Maximum memory of the SQL Server Apply settings MB maximum working memory < Back

- Log storage device:
 - Storage directory:
- Main database storage device:
 - Project folder:

Local Local directory (e.g., "E:\Log_A") Project folder "C:\ProgramData\SCADAProjects"



- Log storage device:
 - Storage directory:
- <u>Main database storage device</u>:
 - Project folder:

Local Local directory (e.g., "E:\Log_A") Local Local directory (e.g., "E:\UnifiedLog")



1.2.7 Log Tag

A log tag is created via the editor "HMI tags > Log tag".

1.2.7.1 Properties

General

In the general properties of the log tag, you can specify the name, tag log, and logging mode of the log tag.

Figure 1-13

LoggingTag_1 [L	ogging tag]	🔍 Proper	ties	🖪 Info	🛛 🗓 Diagnostics	
Properties						
General Tag trigger	General					
Cycle	General					
Limits						
Smoothing		Name:	Logging	gTag_1		
Compression		Data log:	Data lo	g_1		┋
	4	Logging mode:	On cha	nge		-
			Cyclic On der On cha	nand		

The following logging modes are available for a log tag:

- Name: Name of the log tag
- Tag log: Tag log of the log tag
- Logging mode: Logging mode of the log tag
 - Cyclic
 - On change
 - On demand

Tag trigger

Figure 1-14

Tag trigger		
Tag trigger		
	Mode:	None
	Tag:	
	Bit number:	0

The tag trigger is required for the logging modes "On demand" and "On change". You use it to specify when the value of the tag is logged (HMI trigger tag and mode).

You can configure the following modes:

- None
- Rising edge
- Falling edge
- Rising and falling edge

Cycle

You need to specify a logging cycle for the "Cyclical" logging mode. Runtime logs the tag values depending on the defined logging cycle. Figure 1-15

Cycle		
Cycle		
	Logging cycle:	
	Logging cycle factor:	1

This can be set as desired. The shortest possible cycle is 100ms.

In the project navigation, you will find the predefined cycles in the "Cycles" editor. With the editor, it is also possible to define your own cycles.

Limit values

Define threshold values and conditions when you want to log/not log values. Figure 1-16

Limits		
Limits		
	Limit scope: High limit: Low limit:	No limits

The following options are available:

- Limit range
 - No bounds
 - Higher
 - Lower
 - Higher or equal to
 - Lower or equal to
 - Within the limits
 - Within or equal to
 - Out of limits
 - Outside or equal to
- Upper control limit
- Lower control limit
- Use tag limits

F

Smoothing

ïgure 1-17		
Smoothing		
Smoothing		
	Mode:	No smoothing
	Maximum time:	00:00:00
	Minimum time:	00:00:00
	Delta:	0

There are different types of smoothing. Regardless of the type, the aim is to compress the data volume of the logged data and thus to reduce the storage space. Process values are thereby logged only in accordance with certain pre-defined criteria.

The following smoothing modes are available:

- No smoothing
- Compare values
- Value
- Relative value
- Swinging door

"Swinging door" example

Values are evaluated based on the defined rate of change and only logged when the subsequent value falls outside the calculated range.

Compression

Figure 1-18						
Compression						
Compression						
Compression mode: Delay:	End 💌 00:00:00					
Source						
Source:						
Compression mode: Delay: Source Source:	End 00:00:00					

Summarization is only possible in the logging mode "Cyclical". The system combines data points with the same values.

1.2.7.2 Logging Modes

Project planning possibilities

The table shows the different configuration possibilities as a function of logging mode. For example, compression is only possible with "Cyclic".

Table 1-1

Logging mode	Cyclic	On demand	On change (default)	
Tag trigger	ag trigger -		Possible	
Cycle	ОК (e.g., 1s)	-	-	
Limit values	ОК	ОК	ОК	
Smoothing	ОК	ОК	ОК	
Compression	OK	-	-	

"Cyclic" vs. "On change"



In the example, the HMI tag "HMI_Tag_1" is logged with the trigger "Cyclic" as well as with the trigger "On change".

The comparison between the measured values shows that with the trigger "On change", all changes are logged (24 measurement points in 1.5s). However, important information is lost with a "Cyclic" trigger (4 measurement points in 1.5s with one cycle = 500ms).

Therefore, you should consider how detailed you want to log in order not to lose any information and not to let the logs become unnecessarily large.

1.2.8 Log alarm

Figure 1-20

🙀 Discrete alarms 🛛 🙀 Analog alarms 🛛 🙀 OPC UA A&C 🛛 🖶 System events 🛛 🖼 Alarm classes								n classes
Alarm classes								
	Name	State machine	Priority	Log	Backgro Te	ext col Backgro	Text col	Backgro
	SystemAlarmWithoutCle	Alarm without outgoing	12		255	255 255	255	255 🔨
	SystemNotification	Alarm without acknowle	4		173	0, 0 📃 173	0, 0	173
	SystemInformation	Alarm without outgoing	1		220	0, 0 220	0, 0	220
	SystemWarningWithoutC	Alarm without outgoing	8		255	0, 0 255	0, 0	255 ■
	SystemAlarm	Alarm with single-mode	12		255	255 255	255	255
	SystemWarning	Alarm with single-mode	8		255	0, 0 255	0, 0	255
	Information	Alarm without outgoing	1		220	0, 0 220	0, 0	220
	Alarm	Alarm with single-mode	12	Alarm log_1	💌	💌 🗾 💌	💌	[[
	Notification	Alarm without acknowle	4		173	0, 0 📃 173	0, 0	173
	WarningWithReset	Alarm with acknowledg	8		255	0, 0 255	0, 0	255
	Warning	Alarm with single-mode	8		255	0, 0 255	0, 0	255
	AlarmWithReset	Alarm with acknowledg	12		255	255 255	255	255
	CriticalWithReset	Alarm with acknowledg	16		139	255 139	255	139 🗸
<							_	>

You can configure a log alarm by assigning a configured alarm log to the alarm class of the alarm. If an alarm of this alarm class occurs, the alarm is stored in the assigned alarm log.

You can define the languages in which a log alarm is logged using the Runtime settings (Section 2.1.1.1).

1.2.9 Show Logs

1.2.9.1 Control "Trend Control"

Figure 1-21



The "Trend Control" is used to visually display a value progression over time. It can be found in the task card "Tools" ("Tool").

These value sequences can be actual values of process tags. However, log values can also be displayed.

Several trends can be displayed within one Trend Control. It is also possible to divide a Trend Control into several Trend areas. Multiple trends can be displayed in a Trend area as well. The time range of the displayed trend is adjustable.

If actual values are displayed in the Trend Control, the Trend Control is initially empty when the screen is called up. If log tags are displayed, the values are read from the log and then displayed.

The process for configuring the Trend Control can be found in Section <u>2.1.5.1</u>, <u>Displaying a Tag</u> Log.

1.2.9.2 Control "Alarm Control"

Figure 1-22



The "Alarm Control" is used for the visual display of currently pending alarms, the alarm buffer, and log alarms. You use the properties of the Control to set which type of alarms are displayed.

Filter

The alarm display has an integrated filter that you can configure during engineering. Alternatively, this can also be done dynamically in runtime using the button in the menu bar of the Control.

With one filter, several filters or a combination of different filters, you can search for specific items (e.g., alarm classes and fragments in alarm texts).

Updating the Alarm Display

If the alarm display is used to display log alarms, these are loaded into the Control when the screen is called up.

If other alarms that are logged occur in the background, they are not automatically displayed in the alarm display.

You can update the alarm display using the menu button "Update and display logged alarms" or by calling up the screen again.

The process for configuring the alarm display can be found in Section <u>2.1.5.2</u>, <u>Displaying the</u> <u>Alarm Log</u>.

1.2.10 Available System Functions

WinCC Unified provides various system functions for logging, such as deleting logs and writing to logs manually.

- "ClearAlarmLog"
 - Parameter: "Log name"
 - Function:

Deletes the alarm log that was passed via the parameter

- "ClearTagLog"
 - Parameter: "Log name"
 - Function: Deletes the tag log that was passed via the parameter
- "WriteManualValue"
 - Parameters: Name of log tag, value, timestamp

("Logging tag name", "Value", "TimeStamp")

Function:

Writes a log entry for the passed log tag with the specified value and timestamp

You can execute system functions via trigger events of objects or via tasks in the task scheduler.

1.2.11 Scripts

If the functionality of a system function is not sufficient for you, you can write a script in the script language "JavaScript" (JS). You can execute JS scripts via trigger events of objects or via tasks in the task scheduler.

The WinCC Unified System provides various code snippets for different logging functions.

Code snippets are predefined code modules that you need to customize to fit your needs. These are intended to assist you in creating your own scripts.

Tag logging

The following code snippets are available for tag logging:

- Read log
 - Function: Read tag log
- Export tag log as CSV
 - Function: Export tag log as *.csv file
- Add Comment to log tag
 - Function: Add log tags comment
- Correct logged tag values
 - Function: Overwrite value for log tag

Message logging

The following code snippets are available for alarm logging:

- Read log
 - Function: Read log alarm log
- Export alarm log as CSV
 - Function: Export alarm log as *.csv file

1.2.12 Timestamp "pk_TimeStamp" Conversion

Note

The shown conversion of the timestamp is valid for *.csv files, which were exported from a log file with the help of the SQLite Browser (Section 3.3.4).

The timestamp "pk_TimeStamp" of a log tag or a log alarm is not stored in a log as "date & time" format, but as a decimal value (INT8) based on 100ns. The start date for the calculation is 01 January 1601.

Conversion formulas

To convert the timestamp to a visually readable "date & time" format, proceed as follows:

 $pk_TimeStamp_{d,since\ 01.01.1601} = \frac{pk_TimeStamp * 100ns}{1000000 \frac{100ns}{s} * 60 \frac{s}{min} * 60 \frac{min}{h} * 24 \frac{h}{d}} = \frac{pk_TimeStamp}{8.64 * 10^{11}} d$

Excel calculates the date and time back to 31 December 1899. Therefore, the number of days from 01 January 1601 to 31 December 1899 must always be taken into account when converting in Excel and subtracted from the value.

 $\begin{aligned} DayDiff_{d, 01.01.1601-31.12.1899} &= 109205d \\ pk_TimeStamp_{d,from 31.12.1899} &= \frac{pk_TimeStamp}{8.64 * 10^{11}}d - DayDiff_{d, 01.01.1601-31.12.1899} \end{aligned}$

The integer value of the timestamp reflects the number of days, the comma value reflects the time. With the format function, these values can be converted into a date and time.

Example

 $pk_{TimeStamp} = 1.32606 * 10^{17} * 100ns$ $pk_{TimeStamp_{d,from 31.12.1899}} = \frac{1.32606 * 10^{17} * 100ns}{8.64 * 10^{11}} d - 109205 = 44274.56685d$

This results in the following values: Date = Date(44274d) = 19.03.2021Time = Time(0.56685d) = 13:36:16

The process for configuring the conversion in Excel is described in the Section <u>2.1.6.3 Convert</u> <u>a Timestamp in Excel</u>.

1.3 Components Used

The following hardware and software components were used to create this application example:

Tab	le	1	-2
iuo	· •		_

Components	Quantity	Article number	Note
STEP 7 Professional V17 (Optional)	1	SIOS Download (Download) 6ES7822-1AA07-0YA7 (Package)	Optional Download the trial software under the entry ID <u>109784440</u>
SIMATIC WinCC Unified Engineering V17	1	SIOS Download (Download) 6AV2102-0AA07-0AA7 (Package)	Download the trial software under the entry ID <u>109784440</u>
MTP700 Unified Comfort	1	6AV2128-3GB06-0AX0	You can also use other sizes of the Unified Comfort Panel.
WinCC Unified PC Runtime V17	1	SIOS Download (Download)	Download the software under the entry ID <u>109793105</u>
SIMATIC WinCC Unified V17 Database Storage	1	6AV2154-0BS01-7LA0 (Download) 6AV2154-0BS01-7AA0 (Package)	DVD and license for WinCC Unified Database Storage Note Only necessary for database logging with SQL Server
SIMATIC STEP 7 Professional V17 Floating license	1	6ES7822-1AE07-0YA5 (Download) 6ES7822-1AA07-0YA5 (Package)	Optional License for STEP 7 Professional V17
WinCC Unified PC (10k) ES V17	1	6AV2153-2FB01-7LA5 (Download) 6AV2153-2FB01-7AA5 (Package)	License for WinCC Unified Engineering, 10,000 PowerTags Note You can also use a broader engineering license for WinCC Unified.
WinCC Unified PC (150) RT V17	1	6AV2154-3DB01-7LA0 (Download) 6AV2154-3DB01-7AA0 (Package)	License for WinCC Unified PC Runtime, 150 PowerTags Note You can also use a broad Runtime license for WinCC Unified.
WinCC Unified Logging Tags (100) V17	1	6AV2157-2DA00-0LB0 (Download) 6AV2157-2DA00-0AB0 (Package)	License for WinCC Unified Logging, 100 Logging Tags Note You can also use a large logging license for WinCC Unified.

The listed components can be purchased (e.g., via the Siemens Industry Mall).

This application example consists of the following components:

Table 1-3

Components	File name	Note
Documentation	109782859_WinCC_Unified_Logging.pdf	

Note You can learn about the products used in this application example in the courses:

- SITRAIN system course: WinCC Unified & Unified Comfort Panels (Entry ID: <u>109773211</u>)
- SITRAIN advanced course: SIMATIC WinCC Unified for PC systems (Entry ID: <u>109781323</u>)
- SITRAIN entry course: SIMATIC WinCC (TIA Portal) machine-oriented for Comfort Panels and WinCC Runtime Advanced (Entry ID: <u>109758624</u>)
- SITRAIN advanced course: SIMATIC WinCC (TIA Portal) machine-oriented for Comfort Panels and WinCC Runtime Advanced (Entry ID: <u>109758626</u>)
- SITRAIN course: SIMATIC WinCC Professional, SCADA in the TIA Portal (Entry ID: <u>109758618</u>)
- SITRAIN course: SIMATIC Visualization Architect, automatic HMI generation (Entry ID: <u>109758628</u>)
- SITRAIN entry course: WinCC V7 (Entry ID: 109758633)
- SITRAIN advanced course: WinCC V7 and WinCC Options (Entry ID: 109758660)

2 Engineering

2.1 Project Engineering / Configuration

2.1.1 Configuring Runtime Settings

In the Runtime settings, you can define the logging languages in Runtime, as well as the storage locations of the main databases for tag and alarm logging.

2.1.1.1 Enabling Logging Languages

Unified Comfort Panel/WinCC Unified Runtime PC

 Open the Runtime settings of your configuration. ("Project tree > <device name> > Runtime settings")



Figure 2-2



- Open the settings for Language and font. "Runtime settings > Language & font"
- 3. Click the "Enable for logging" checkbox to enable the associated Runtime language for logging.

Runtime language and font selection Image: Content in the selection	Langua								
Runtime language and font selection	Langua	age oc ro	ont						
n Order Enable Language Fixed font 1 Fixed font 2 Fixed font 3 Fixed font 4 Enable for logging 0	Runt	time lan	iguage a	nd font selection	on				
order Enable Language Fixed font 1 Fixed font 2 Fixed font 3 Fixed font 4 Enable for logging 0 ☑ English (United Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Times New Ro SimSun Siemens Sans 1 ☑ German (Germ Arial Siemens Sans 1 ☑ German (Germ A	font 🔶 🛨 🗍	F							
n Siemens Sans Siemens Siemens Siemens Sans Siemens Sie		Order	Enable	Language	Fixed font 1	Fixed font 2	Fixed font 3	Fixed font 4	Enable for logging
Q 1 German (Germ Arial Times New Ro SimSun Siemens Sans	em (💾) 💿	0		English (United	. Arial	Times New Ro	SimSun	Siemens Sans	
		1		German (Germ	Arial	Times New Ro	SimSun	Siemens Sans	

Note Logging in Runtime language

Logging in the Runtime language only takes place if this is also activated. Ensure that the "Enable" checkbox is enabled for the associated Runtime language.

Availability Language in Runtime Settings

If a language is missing in the "Runtime languages" table, you must first define it as the project language.

To do this, open the project language editor and add the desired language to your project ("Project Navigation > Languages & resources > Project languages").

Figure 2-3

General		
Editing language: English (United S	tates) 💌 Reference language: German (Ger	many) 💌
Afrikaans (South Africa)	Danish (Denmark)	Estonian (Estonia)
Albanian (Albania)	Dutch (Belgium)	Faroese (Faroe Islands)
Armenian (Armenia)	Dutch (Netherlands)	Finnish (Finland)
Azeri (Cyrillic, Azerbaijan)	English (Australia)	French (Belgium)
Azeri (Latin, Azerbaijan)	English (Belize)	French (Canada)
Basque (Basque)	English (Canada)	French (France)
Belarusian (Belarus)	English (Caribbean)	French (Luxembourg)
Bulgarian (Bulgaria)	English (Ireland)	French (Principality of Monaco)
Catalan (Catalan)	English (Jamaica)	French (Switzerland)
Chinese (Hong Kong S.A.R.)	English (New Zealand)	Galician (Galician)
Chinese (Macao S.A.R.)	English (Republic of the Philippines)	🔲 Georgian (Georgia)
Chinese (People's Republic of China)	English (South Africa)	German (Austria)
Chinese (Singapore)	English (Trinidad and Tobago)	🛃 German (Germany)
Chinese (Taiwan)	English (United Kingdom)	German (Liechtenstein)
Croatian (Croatia)	English (United States)	German (Luxembourg)
Czech (Czech Republic)	English (Zimbabwe)	German (Switzerland)

2.1.1.2 Configuring a Database Type

"SQLite" and "SQL Server" are available as database types for WinCC Unified.

Unified Comfort Panel

Only the database type "SQLite" is available for the Unified Comfort Panels. No configuration is necessary because SQLite is set by default and SQL Server is not selectable.

WinCC Unified Runtime PC

 Open the Runtime settings of your configuration. ("Project tree > <device name> > Runtime settings")

Figure 2-4

	Project tree	•
	Devices Plant objects	
	11 II I	
	 myProject 	^
ä	💕 Add new device	
2	💑 Devices & networks	
	Image: MyPLC [CPU 1516-3 PN/DP]	
	Important Mitter Mitte Mitter Mitter Mitt	
	myPcStation [SIMATIC PC st	
	Device configuration	
	🛂 Online & diagnostics	
	🕴 🔻 📄 HMI_RT_2 [WinCC Unified	
	Device configuration	
	📍 Runtime settings 🚬	
	Creenr	

- Open the settings for the storage system. ("Runtime settings > Storage system")
- 3. Select the database type for the log databases.

Figure 2-5 myProject > myPcStation [SIMATIC PC station] > HMI_RT_2 [WinCC Unified PC RT] > Runtime settings _ # = X General Storage system Alarms Services Database type Language & font Database type: SQLite Collaboration Microsoft SQ Storage system Database location for tag persistency Tag settings 2 Good Manufact M Storage medium: Project folder Folder: Folder of the runtime project Main database location for tag logging Storage medium: Default -Folder: ned in the WinCC Unified - Configuration Tool Main database location for alarm logging Storage medium: Default -Folder: ned in the WinCC Unified - Configuration Tool < III >

2.1.1.3 Configuring Storage Locations for the Main Databases

Unified Comfort Panel

 Open the Runtime settings of your configuration. ("Project tree > <device name> > Runtime settings")

Figure 2-6



- Open the settings for the storage system. ("Runtime settings > Storage system")
- 3. Select the storage device for the storage location of the main database for tag logging (e.g., interface "SD-X51").

Figure 2-7		
myProject > myMTP7	00 [MTP700 Unified Comfort]	_₽≡×
General Alarms	Storage system	^
Services	Database type	
Language & font	Database type: SQLite	
 Remote Access 		
Storage system	Database location for tag persistency	
lag settings	Database location for tag persistency	
	Storage medium: Off	
	Folder:	=
	, Main database location for tag logging	
	Storage medium: SD-X51	
	Folder: Off	
	SD-X51	
	Main database location for alarm log USB-X61	
	Storage medium: Uff	
	Folder:	
< III >		~

Note Ensure that a sufficiently large SD card is inserted in interface "SD-X51" /a sufficiently large USB storage device is inserted in interface "USB-X61"/"USB-X62".

4. Optional: Specify a destination folder on the storage device.

Figure 2-8

General	Champion and the second s	^
Alarms	Storage system	_
Services	Database type	
Language & font	Database times 501 ite	
Remote Access	Source view view view view view view view vie	
Storage system		
Tag settings	Database location for tag persistency	
	Storage medium: Off	
	Folder:	_
	•	
	, Main database location for tag logging	
	Storage medium: SD-X51	
	Folder: /Archives	6
	Main database location for alarm logging	
	Storage medium: Off	

- **Note** If the folder/folder structure does not exist on the storage device, it is created automatically when logging is started.
 - 5. Repeat steps 3 and 4 for the location of the main alarm logging database.

Figure 2-9 myProject ► myMTP	700 [MTP700 Unified Comfort] > Runtime settings	_ @ = X
General Alarms	Storage system	^
Services Language & font	Database type	
Remote Access Storage system	Database type: SQLite	
Tag settings	Database location for tag persistency	
	Storage medium: Off	_
	1 Milet.	=
	, Main database location for tag logging	
	Storage medium: SD-X51	
	Main database location for alarm logging	
	Storage medium: SD-X51	
	AI O	~

WinCC Unified Runtime PC

 Open the Runtime settings of your configuration. ("Project tree > <device name> > Runtime settings")

Figure 2-10

Figure 2-11



- Open the settings for the storage system. ("Runtime settings > Storage system")
- 3. Select the storage device for the storage location of the main database for the tag logging (e.g., "Local" off).

eneral	Storage system	
larms		
ervices	Database type	
anguage & font	Database type: SOLite	
ollaboration		
torage system		
ag settings	2 Database location for tag persistency	
ood Manufac	Storage medium: Project folder	
	Folder: Folder of the runtime project	
	- Main database la setter factor la seter	
	Main database location for tag logging	
	Storage medium: Local	
	Folder: Default	
	Main database location for alarm log Breist folder	
	Main database location for alarm log Project loider	
	Storage medium: Default	
	Folders and in the WinCC Unified Configuration Tool	

Note

Ensure that the selected storage device has sufficient memory size for the created log.

4. Specify a destination folder on the storage device.

Figure 2-12

General	Storage system	
Alarms		
Services	Database type	
anguage & font	Database tune: SOLite	
ollaboration	Stabber gpc. Sector .	
torage system		
ag settings	Database location for tag persistency	
Good Manufacturin	Storage medium: Project folder	
	Folder: Folder of the runtime project	
	1	
	, Main database location for tag logging	
	Storage medium: Local	
	Folder: D:\Archives\TagLogging	
	Main database location for alarm logging	
	Storage medium: Default	
	Folder: hed in the WinCC Unified - Configuration Tool	

Note If the folder/folder structure does not exist on the storage device, it is automatically created when logging is started

5. Repeat steps 3 and 4 for the location of the main alarm logging database.

	- -	
General Alarms	Storage system	^
Services	Database type	
Language & font Collaboration	Database type: SQLite	
Storage system		
Tag settings	Database location for tag persistency	
Good Manufacturin	Storage medium: Project folder	
	Folder: Folder of the runtime project	
	Main database location for tag logging	≣
	Storage medium: Local	
	Folder: D:\Archives\TagLogging	
	Main database location for alarm logging	
	Storage medium: Local	
	Folder: D:\Archives\AlarmLogging	

_

2.1.2 Configuring Log Settings with "WinCC Unified Configuration"

- Start the "WinCC Unified Configuration" program. (Shortcut "WinCC Unified Configuration" on the desktop/"Windows key > Search" > Search term = "WinCC Unified Configuration")
- 2. Confirm the existing certificate management settings.

SIEMENS	Totally Integrated Automation
WinCC Unified	Create or select a certificate for the website.
 Certificate management User administration Archive settings Reporting Secure download Apply settings 	Keep the existing configuration I a certificate later Select an existing certificate unfiedv17s3 Create a new certificate unfiedv17s3_Self Signed
English 🗸	Cancel Next > N

- a. To do this, enable the option "Keep the existing configuration" (1).
- b. Confirm the dialog by clicking the "Next" button (2).
- 3. Confirm the existing User Administrator settings.

Figure 2-15



- a. Enable the option "Keep the existing configuration" (1).
- b. Confirm the dialog by clicking the "Next" button (2). SIMATIC WinCC Unified System - Logging Article ID: 109782859, V1.0, 12/2021
Change the storage location for the log databases to an appropriate location (e.g., "C:\UnifiedLog").

Figure 2-16

WinCC Unified - Configuration	
SIEMENS	Totally Integrated Automation
WinCC Unified	Location of archive databases and SQL server settings
 Certificate management 	Keep the existing configuration
Super administration	Location of the archive databases.
Archive settings	Drive with the most f
Reporting	We recommend that inferent hard disk than the one with the variant sinstallation is order to extinuine performance under biotechard
Secure download	
 Apply settings 	Maximum memory of the SQL Server MB maximum working memory The default value of the physical memory.
English 🗸	
	Cancel < Back Next

- a. Click the "Browse" button (1).
- b. Select the path (2). If the entered path does not exist, the necessary folders are created automatically during configuration.
- c. Set (3) the maximum memory used (e.g., 4096), for logging in MS SQL Server (3). By default, 1/3 of the existing physical memory is predefined.
- d. Confirm the log settings entered by clicking the "Next" button (4).
- 5. Confirm the existing settings for reporting.



- a. Enable the option "Keep the existing configuration" (1).
- b. Confirm the dialog by clicking the "Next" button (2).

6. Confirm the existing settings for encrypted download.

```
Figure 2-18
```



- a. To do this, enable the option "Keep the existing configuration" (1).
- b. Confirm the dialog by clicking the "Next" button (2).
- Confirm all configuration settings via the "Accept" button. Figure 2-19



The services/settings are configured for the PC station.

8. After the settings have been configured successfully, the status is displayed. Confirm the settings by clicking the "Finish" button.



2.1.3 Creating a Log

2.1.3.1 Configuring a Tag Log

 Open the log editor of your configuration. ("Project tree > <Device name> > Logs")

Fig	ure 2-21				
	Project tree	<	Project tree		
	Devices Plant objects		Devices	Plant objects	
	11 II I	3	Eñ		🔲 🖻
	 myProject 		🔻 🔄 myProjec	t	^
at	Add new device		📑 Add n	ew device	
5	面 Devices & networks	S.	n Device	es & networks	
	Image: The second se		🔹 🕨 🫅 myPLO	C [CPU 1516-3 PN/DP]	
	▼ 📄 myMTP700 [MTP700 Unified Co		🔹 🕨 🛅 myMT	P700 [MTP700 Unified	d
	Device configuration		🔹 🗖 myPcs	station [SIMATIC PC sta	
	🗓 Online & diagnostics		🚺 De	vice configuration	
	📍 Runtime settings		🖁 🖓 Or	line & diagnostics	=
	Screens		🚽 🛉 👻 🛅 HN	AI_RT_2 [WinCC Unified	d b
	🕨 🔚 HMI tags		L IY	Device configuration	
	🔁 Connections		Y Y	Runtime settings	
	🖂 HMI alarms		🔰 🕨 🛅	Screens	
	Parameter set types		🔰 🕨 😓	HMI tags	
	Logs		2	Connections	
	5 Scheduled tasks			HMI alarms	
	🕨 🔚 Scripts) 🔹 🕨 🗖	Parameter set types	
	Collaboration data			Logs	
	🕐 Cycles		5	Scheduled ta	
	🔛 Text and graphic lists) 🔰 🕨 🛅	Scripts	
	Image:			Collaboration data	
			ථ	Cycles	
			1.2	Text and graphic lists	

- 2. Open the editor for the configuration of a tag log.
- 3. Add a new tag log.

Figure 2-22						
∋ct ► myPcSt	tation [SIMATIC PC	station] HMI_R	T_2 [WinCC Unified	I PC RT] 🕨	Logs 🗕	∎≡×
				Data logs	📘 Alarm	logs
Add new:	Storage medium	Storage directory	Log time period	Maximum	(MB)	Segme
<			•			>
Name	Proc	ess tag	Logging mode	Trigg	er mode	
		101				>

4. Rename the log

(double-click the <log name>).

Figure 2-23

	Name	Storage medium	Storage directory	Log time period	Maximum log size (MB)	Segme	
~	LogData1	Default 💌	Main database directory	7.00:00:00	1000	1.00:0	
	<add new=""></add>						

Unified Comfort Panel

5. Select the storage device (e.g., SD-X51 (SD card inserted in the interface)) and use it to specify where you want to store your tag log.

Figure 2-24

1	Name	Storage medium		Storage directory	Log time period	Maximum log size (MB)	Segment time peri
<u>.</u>	LogData1	SD-X51 👻			7.00:00:00	1000	1.00:00:00
	<add ne<="" th=""><th>SD-X51 USB-X61</th><th></th><th></th><th></th><th></th><th></th></add>	SD-X51 USB-X61					
		USB-X62					

WinCC Unified Runtime PC

5. Select the storage device (e.g., "Standard" (storage location of the main database)) to specify where you want to store your tag log.

Figure 2-25

	Name	Storage mediur	n	Storage directory	Log time period	Maximum	Maximum log size (MB)	
~	LogData1	Default	-	Main database directory	7.00:00:00	1000		1.00:0
	<add new=""></add>	Default Local						
<								>

Set the log size by the period/maximum log size.
 ("Log time period" and "Maximum log size (MB)" parameters)

Figure	2-26
· ·gaio	

	Log time period	Maximum log size (MB)	Segment time period	Maximum segment size (
~	7.00:00:00	1000	1.00:00:00	100	Tu
		AI			

 Set the log segment size by the time period/maximum segment size. ("Segment time period" and "Maximum segment size (MB)" parameters)

	Segment time period	Maximum segment size (Segment start time	
~	1.00:00:00	100	Tuesday, November 10, 2020 09:46	
		AI		

8. Specify the start time for logging. ("Segment start time" parameter)

Alternatively, you can use the "Today" button to automatically apply the engineering date. Figure 2-28

 -																			
-	riod	Maximu	m segme	ent size (MB)	Seg	gme	nt s	tart	time	2				Bad	kup	mod	de	Backup path	
	1	100			Tu	esda	ay,	Nov	em	ber	10		•	No	back	cup	-		
					[Nov	/em	nber		•	20	020		M	9				
<]				-		S	Μ	Т	W	Т	F	5						>
			1		-	45	1	2	3	4	5	6	7						
Log	ging	tags				46	8	9	10	11	12	13	14						
	Nam	e		Process t	a i	47	15	16	17	18	19	20	21				Tri	igger mode	
						48	22	23	24	25	26	27	28						
						49	29	30	1	2	3	4	5						
						50	6	7	8	9	10	11	12						
											То	day	-						
- N				111	_	_	_	_	_	_									- C

2.1.3.2 Configuring an Alarm Log

 Open the log editor of your configuration. ("Project tree > <Device name> > Logs")



- 2. Open the editor for the configuration of a tag log.
- 3. Add a new alarm log.

Figure	2-30					
myPro	oject ► myM	TP700 [MTP700	Unified Comfor	t] 🕨 Logs		_∎≣×
					💽 Data logs	Alarm logs
	Name	Storage medium	Storage directory	Log time period	Maximum log size	e (MB) nt time
	<add new=""></add>	~				
<			1111			>
Renar	me the log					

 Rename the log (double-click the <log name>).

	Name	Storage medium			Storage directory	Log time period	Maximum log size (MB)	Segment time p
	LogAlarm1	m1 SD-X51 💌			7.00:00:00	1000	1.00:00:00	
	<add new=""></add>							

Unified Comfort Panel

5. Select the storage device (e.g., SD-X51 (SD card inserted in the interface)) and use it to specify where you want to store your alarm log.

Figure 2-32

	Name	Storage mediu	m	Storage directory	Log time period	Maximum log size (MB)	Segment time p
	LogAlarm1	SD-X51	•		7.00:00:00	1000	1.00:00:00
	<add new=""></add>	SD-X51		5			
		USB-X61					
		USB-X62					

WinCC Unified Runtime PC

5. Select the storage device (e.g., "Standard" (storage location of the main database)) to specify where you want to store your alarm log.

Figure 2-33

	Name	Storage medium		Storage directory	Log time period	Maximum log size (MB	Segme
	LogAlarm1	Default	•	Main database directory	7.00:00:00	1000	1.00:0
	<add new=""></add>	Default		5			
		Local					

6. Set the log size by the period/maximum log size. ("Log time period" and "Maximum log size (MB)" parameters)

Figure	2-34				
	Log time period	Maximum log size (MB)	Segment time period	Maximum segment size (MB)	
	7.00:00:00	1000	1.00:00:00	100	Tue
		AI			

7. Set the log segment size by the time period/maximum segment size. ("Segment time period" and "Maximum segment size (MB)" parameters)



8. Specify the start time for logging. ("Segment start time" parameter)

Alternatively, you can use the "Today" button to automatically apply the engineering date. Figure 2-36

	_														
-		Maximum segment size (MB)	Se	gme	nt s	tart	time					Backu	p mo	de	Backup path
	2	100	Tu	esd	ay,	Nov	/em	ber	10		-	No ba	ckup	-	
				No	vem	nber		•	20	020	E				
					s	М	т	w	т	F					
				45	1	2	3	4	5	6	7				
L				46	8	9	10	11	12	13	14	F .			
				47	15	16	17	18	19	20	21				
				48	22	23	24	25	26	27	28	3			
				49	29	30	1	2	3	4	5				
				50	6	7	8	9	10	11	12	2			
									То	day					

2 Engineering

2.1.3.3 Configuring a Log Backup

- NoteThe backup mode can only be activated if the database type "SQL Server" is configured in
the Runtime settings. You can use the backup function for both tag and alarm logs.
The process for configuring the database type is described in Section 2.1.1.2.
 - Open the log editor of your configuration. ("Project tree > <Device name> > Logs")



	Project tree	◀
	Devices Plant objects	
		ð
	▼ 📄 myProject	^
te	💣 Add new device	
2	n Devices & networks	
	Image: Market Ma Market Market M Market Market Mar Market Market Mark	
	Important Mitter Mitte Mitter Mitter Mitt	
	myPcStation [SIMATIC PC sta	
	Device configuration	
	😵 Online & diagnostics	≡
	🗧 🔻 🛅 HMI_RT_2 [WinCC Unified	
	Device configuration	
	🍸 Runtime settings	
	Screens	
	🕨 🔁 HMI tags	
	🔁 Connections	
	MII alarms	
	Parameter set types	
	Logs	
	5 Scheduled tr	
	Im Scripts	
	Collaboration data	
	Cycles	
	Text and graphic lists	

2. Enable the backup mode for the desired log. ("Backup mode" parameter)

	riod	Maximum segment size (MB)	Segment start time	Backup mode	Backup path
~		100	Tuesday , November 10 💌	Path 🔫	
				No backup	2
				Path	
<					>

3. Enter the backup path for the log backup. ("Backup path" parameter)

Figure 2-39

	Maximum segment size (MB)	Segment start time		Backu	ip mode	Backup path
~	100	Tuesday , November	10	Path	-	D:\UnifiedArchives\Backup
						3

4. Assign backup path permissions (from WinCC V16 Update 2 to WinCC V17 including updates).

Run through the "WinCC Unified Configuration" tool a second time with the backup path. See Chapter 2.1.2 "Configuring Archive Settings with "WinCC Unified Configuration".

2.1.3.4 Integrating a Log Backup

A log backup is integrated into Runtime via the "SIMATIC Runtime Manager" tool. The integration with the tool is only possible for a real "WinCC Unified Runtime PC".

Note To include a log backup, the real "WinCC Unified Runtime PC" must be in the "Running" status.

To include a log backup, proceed as follows:

- 1. Open the tool "SIMATIC Runtime Manager" under "<Installation path>\Siemens\Automation\WinCCUnified\bin\SIMATICRuntimeManager.exe"
 - Installation path (default): C:\Program Files
- 2. Click the reverse arrow button in the "SIMATIC Runtime Manager" to restore/remove a log segment from a log database.

				localhost		mputer name or IP address:
						-
						ects
						m 聞 C
	ID	Туре	State	Device name	Autostart	roject
-8f521ce97305	aca5daef-b72b-4b7c-b617-8	Project	Running	HMI_RT_1	0) 🛑 MyProject
2						
2						

- 3. Select the type of log.
- 4. Select the log segment you want to restore.
- 5. Select start and end time for recovery.
- 6. Select the backup path via the "..." button.
- 7. Confirm the settings by clicking the "OK" button

oject settings			
estore segments			
Restore Database	Segments temporarily		
— O Alarm	HMI_RT_1::Data log_1	R	estore Segments
🖲 Tag	All tag logs HMI_RT_1::Data log_1	Br	emove Segments
Start:	4/29/2021 ~ 00:00:00 +		
End:	4/29/2021 ~ 00:00:00		
Backup path:			
Status			

2.1.4 Configuring a Log Tag/Alarm

2.1.4.1 Configuring a Log Tag

A log tag is configured at the associated HMI tag.

Follow the steps below for the configuration:

 Open the variable table of the HMI variable to be logged. ("Project tree > <device name> > HMI tags > <Name of tag table>")

F	ïgure 2-42				
	Project tree	□		Project tree	
	Devices Plant objects			Devices Plant objects	
				- EX	💷 🛃
	🔻 📋 myProject	^	ioi l	💌 🛅 myProject	^
zat	📫 Add new device		zat	📫 Add new device	
ie.	n Devices & networks		ila	n Devices & networks	
list	myPLC [CPU 1516-3 PN/DP]		/isı	Image: The second se	
	▼ 🛅 myMTP700 [MTP700 Unified Co		1	Important Mitter Mitte Mitter Mitter Mitt	
	Device configuration			myPcStation [SIMATIC PC station]	
	🖏 Online & diagnostics			Device configuration	
	🍟 Runtime settings	=		🖏 Online & diagnostics	=
	Screens			🕴 🝷 🛅 HMI_RT_2 [WinCC Unified PC RT	1
	🔻 ᇩ HMI tags			Device configuration	
	lange Show all tags			🍸 Runtime settings	
	🚔 Add new tag table			Employees	
	🝯 Default tag table [7]			🔻 ᇩ HMI tags	
	🖫 Ventilator1 [14]			lange Show all tags	
	🔁 Connections			🚔 Add new tag table	
	🖂 HMI alarms			🍯 Default tag table [7]	
	Parameter set types			👆 Ventilator1 [14]	
	Logs			🔁 Connections 🔪 🜉	2
	5 Scheduled tasks			🖂 HMI alarms 🛛 🚺	
	Scripts			🕨 🎦 Parameter set types	
	📑 Collaboration data			Logs	
	🕐 Cycles			5 Scheduled tasks	
	🔛 Text and graphic lists			En Scripts	
	-			📑 Collaboration data	
				Cycles	
				🔛 Text and graphic lists	

2. Select the HMI tag to be logged. Figure 2-43

0									
[SIN	MATIC PC station] HMI_RT_2	[WinCC U	nif	ied PC RT] 🕨 HMI tags	•	Ventilator1 [14]		×
🔊 🖻 🗄 🚵									
	Ve	ntilator1							
		Name 🔺	Data type		Connection		PLC name		
	-	Ventilator1Data_setpointSpeed	Int		myPcStation_to_myPLC		myPLC		^
	-	Ventilator1Data_speedLimitAct	Bool		myPcStation_to_myPLC		myPLC		
Ventilator1Data_statusWord			Word		myPcStation_to_myPLC		myPLC		
	Ventilator1Data_temperatureFa.		. Real		myPcStation_to_myPLC		myPLC		=
		<add new=""></add>							

Local modules

ż

4.

5.

3. Open the editor area for bit and analog alarms, as well as log tags. (Click the black arrow pointing upwards)

Figure 2-44

[SIMATIC PC statio	on] ▶ HMI_RT_2	[WinCC Unif	ied PC RT] 🕨 HMI ta	gs 🕨	Ventila	tor1 [14]	_ 🖬 🖬 >	<
🥩 🖻 🖶 🐍							-	
Ventilator1								
Name 🔺		Data type	Connection		PLC name	•		
Ventilator1Da	ata_setpointSpeed	Int 🔳	myPcStation_to_myPLC		myPLC			^
Ventilator1Da	ata_speedLimitAct	Bool	myPcStation_to_myPLC		myPLC			
Ventilator1Da	ata_statusWord	Word	myPcStation_to_myPLC		myPLC			
Ventilator1Da	ata_temperatureFa.	Real	myPcStation_to_myPLC		myPLC		1	
<add new=""></add>								
							4	~
<							>	
Discrete alarms	Analog alarm	s Loggi	ng 3					
ID	ID Name		Alarm text			Trigger tag	Trigge	
<add new=""></add>								
Open the editor fo (Click the tab "Log	r log tags. Iging Tags")							
Create a new log t (Double-click " <ac< td=""><td>ag. ld new>")</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></ac<>	ag. ld new>")							
Figure 2-45								
[SIMATIC PC statio	on] ▶ HMI_RT_2	[WinCC Unif	ied PC RT] → HMI tag	gs ►	Ventila	tor1 [14]	_ ₽ ≡>	<
🥩 🖻 🗄 🔏								
Ventilator1								

Ventilator1 Name Data type Connection PLC name Image: Second											+ 꿃	E
Name Data type Connection PLC name Image: Ventilator1Data_setpointSpeed Int Image: myPcStation_to_myPLC myPLC Image: Ventilator1Data_speedLimitAct. Bool myPcStation_to_myPLC myPLC Image: Ventilator1Data_statusWord Word myPcStation_to_myPLC myPLC Image: Ventilator1Data_temperatureFa. Real myPcStation_to_myPLC myP											ator1	Ver
Image: Set of the set of			PLC name			Data type Connection					ne 🔺	1
Image: Wentilator1Data_speedLimitAct Bool myPcStation_to_myPLC myPLC Image: Word Image: Word myPcStation_to_myPLC Image: Word Image: Word Image: Word Image: Word Image: Word Image: Word <td></td> <td></td> <td>myPLC</td> <td></td> <td>n_to_myPLC</td> <td>myPcS</td> <td></td> <td>Int</td> <td>ointSpeed</td> <td>ata_setp</td> <td>Ventilator1Da</td> <td>-</td>			myPLC		n_to_myPLC	myPcS		Int	ointSpeed	ata_setp	Ventilator1Da	-
Image: Second			:o_myPLC myPLC			myPcS		Bool	Ventilator1Data_speedLimitAct.			
Ventilator1Data_temperatureFa. Real myPcStation_to_myPLC myPLC <add new=""> Image: Second se</add>			myPLC		n_to_myPLC	myPcS	or1Data_statusWord Word n		Ventilator1Data_statusWord			-
< Add new> Analog alarms Logging tags Name Process tag Data log Logging mode Trig			myPLC		n_to_myPLC	myPcS		Real	eratureFa.	ata_temp	Ventilator1Da	-
Image: Constraint of the second se									<add new=""></add>			
Image: Constraint of the second se	[
Discrete alarms Analog alarms Logging tags Name Process tag Data log Logging mode Trig	>			III					<			
Discrete alarms Analog alarms Logging tags Name Process tag Data log Logging mode Trig <add new=""></add>						A						
Name Process tag Data log Logging mode Trig <add new=""></add>						ng tag	Log	s	og alarm	Anal	e alarms)isc
Add new> 5	ger m.	Trig	Logging mode			ag Data log			Name Process t			
								<add new=""></add>				
										5	\rangle	
										9)		

6. Rename the log tag to an appropriate name of your choice.

Name Process tag Data log Logging mode LoggingTag_1 Ventilator1Data_set LogData1 III On change	
Ventilator1Data_set LogData1	
	•

2 Engineering

7. Select the desired tag log (e.g., LogData1).

Figure 2-47

Disc	crete alarms	Analog alarms	Logging tags
	Name	Process tag	Data log Trigger mode
ja	LoggingTag_1	Ventilator1Data_set	LogData1 II. On change None
	<add new=""></add>		✓ III Logs I Name LogData 1 O
			Ð

 Set the logging mode (e.g., "On change"). Figure 2-48

Disc	crete alarms	Analog alarms	Logging tags			
	Name	Process tag	Data log		Logging mode	Trigger mode
la	LoggingTag_1	Ventilator1Data_set	LogData1	I	On change 🦷	None
	<add new=""></add>				Cyclic	
					On demand	
					On change	

9. Set the trigger tag and mode (e.g., "Rising Edge").

Figure 2-49

Logg	ing tags				
	Trigger mode	Trigger tag	Limit scope	High limit	Lo
ja •	🛛 Rising edge 🚽 🥆	Ventilator1Data_s 🔳 📖	No limits 🔹		
	None	~0 ——			
	Rising edge				
	Falling edge Rising and falling edge				

Multi-selection

- 1. Select the HMI tags for which you want to add a log tag.
- 2. Open the editor for log tags. (Click the tab "Logging Tags")
- 3. Click the button "Add new logging tag for each selected loggable tag".

V	entil	ator1						
	Nar	me 🔺	0	Data type	Connection	PLC name	PLC tag	Address
1	Ventilator1Data_actualSpeed Ventilator1Data_setpointSpeed			nt 🔳	HMI_Conne	PLC_1	Ventilator1Data.actua	
•				nt	HMI_Connectio	PLC_1	_1 Ventilator1Data.setpo	
1	<a0< td=""><td>new></td><td></td><td></td><td></td><td></td><td></td><td></td></a0<>	new>						
Di	De alarms Analog alarms Logging tags							
2 loggable tags are selected								
		3 Pi	rocess tag	g Data	Io	Logging mode	Trigger mode	Trigger tag
(ngTag_1 Ventila			or1Data_actualSp.		On change	None	
	\subseteq	jingTag_1 V	/entilator	1Data_setpoint		On change	None	

Configuring the Settings for Limit Detection/Smoothing

 Specify the desired limit range in which you want to log the values for the tag. Figure 2-51

Disc	crete alarms	Analog ala	rms Log	iging t	tags			
	Limit scope	High limit	Low limit	S	moothing mode		Compression mode	
Ja I	Within limits 🔍 🔫	1349 Const-	1200	Const 🗸 🖡	No smoothing	-	End	-
	No limits							
	Greater	(💾))						
	Less							
	Greater or equal							
	Within limits							
	Within or equal							
	Outside limits							
	Outside or equal							

2. Set the limit value(s) depending on the selected limit range.

Figure 2-52

Discrete alarms	rete alarms Analog alarms Logging tags			
Limit scope	High limit	Low limit	Smoothing mode	
B		AI	1000 C	

 Alternatively, you can define the limit values depending on an HMI tag in Runtime. To do this, set the mode to "HMI_Tag".

Fig	ure	2-53					
	Logo	ging tags					
		Limit scope		High limit		Low limit	ing mode
	þ	Within limits	-	1349	Const 🗸	1200	Const 🗸 No smoothing 💌
							Const Constant
							I HMI_Tag

4. Alternatively, you can use the limit values of the trigger tag.

Figure 2-54

LoggingTag_1 [L	.ogging tag]	Roperties	🛄 Info	 Diagnostics 	
Properties					
General					
Tag trigger	Limits				
Cycle	Limits				
Limits					
Smoothing		Limit scope: With	nin limits		-
Compression		High limit:			
		Low limit:	4		
,		Use tag limits: 🛃			

5. Set the smoothing mode.

Discrete alarms	Analog alarms	Logging tags		
.imit scope	High limit	Low limit	Smoothing mode	4
🛵 Mithin limits	▼ 1349	[and + 1200	Const → Swinging door	-
			No smoothing	
			Compare values Value	
			Relative value	
			Swinging door	

2.1.4.2 Configuring a Log Alarm

You create a log alarm by assigning the configured alarm log to the corresponding alarm class of the alarm. Therefore, all alarms of this alarm class are stored with their states in the assigned alarm log.

Follow the steps below for the configuration:

 Open the HMI alarm editor of your configuration. ("Project tree > <device name> > HMI alarms")



2. Switch the alarm class editor. ("Alarm classes" tab)

	0								
t	•	myPcStation [SIMATIC PC station	n] 🕨 HMI_RT_	2 [WinCC	Unified PC RT] 🕨	HMI alarms		×
2	Dis	crete alarms	🔀 Analog alarn	ns 🛛 🙀 OPC	UA A&C	System eve	nts 🛛 🔚 Alarm o	lasses	
₽									
	Dis	crete alarms					(
		ID	Name	Alarm text		Alarm class	Trigger tag	Trigge	
	2	1	DiscreteAlarm1	Ventilator 1 wa	s started	Information	Ventilator1Data_o	0	
		<add new=""></add>							

 Assign the alarm log from which you want to log the alarms to the alarm classes (e.g., fans). Figure 2-58

t	•	myPcStation [SIMATIC	PC station] • HMI_RT_	2 [WinCC	Unified PC RT]	▶ HMIala	irms _	·■■×
	Dis	crete alarms 🛛 🔄 Ana	alog alarms 🛛 🙀 OPC	UA A&C	System ev	ents 🔽	Alarm c	lasses
	Ala	urm classes						
		Name	State machine	Priority	Log	Backgro	Text col	Backgro
		SystemAlarmWithoutCle	Alarm without outgoing	12		255	255	255
		SystemNotification	Alarm without acknowle	4		173	0, 0	173
		SystemInformation	Alarm without outgoing	1		220	0, 0	220
		SystemWarningWithoutC	Alarm without outgoing	8		255	0, 0	255
		SystemAlarm	Alarm with single-mode	12		255	255	255
		SystemWarning	Alarm with single-mode	8		255	0, 0	255
		Information	Alarm without outgoing	1	LogAlarm1	220	0, 0	220
		Alarm	Alarm with single-mode	12		255	255	255
		Notification	Alarm without acknowle	4		173	0, 0	173
	-	WarningWithReset	Alarm with acknowledg	8		255	0, 0	255
	-	Warning	Alarm with single-mode	8		255	0, 0	255
	_	AlarmWithReset	Alarm with acknowledg	12		255	255	255
	~	CriticalWithReset	Alarm with acknowledg	16		139	255	139
	\	OperatorInputInformation	Alarm without outgoing	1		220	0, 0	220
	-	OperatorInputRequest	Alarm with single-mode	5		0, 0	255	0, 0
	\	Critical	Alarm with single-mode	16		139	255	139
	-	Acknowledgement	Alarm with single-mode	0		255	0, 0	255
	-	No Acknowledgement	Alarm without acknowle	0		255	0, 0	255
	\	Ventilators	Alarm with single-mo 💌	0	LogAlarm 1 🔳 🔤		💌	💌
		<add new=""></add>						
	۲,							>

2.1.5 Displaying a Log in Runtime

2.1.5.1 Displaying a Tag Log

To display a tag log in Runtime, use the "Trend Control".

Follow the steps below for the configuration:

 Open the screen in which you want to display the tag log. ("Project tree > <device name> > Screens > <Screen name")

Project tree		Project tree
Devices Plant objects		Devices Plant objects
12		1 Etti
-		-
🗧 🔻 🗋 myProject	^	🧧 💌 🛅 myProject
🗧 🛛 🎽 Add new device		🙎 🎽 Add new device
e 📩 Devices & networks		🔤 📩 Devices & networks
MyPLC [CPU 1516-3 PN/DP]		🗧 🕨 🛅 myPLC [CPU 1516-3 PN/DP]
🔹 💌 🔽 myMTP700 [MTP700 Unified C	o	myMTP700 [MTP700 Unified Comparison of the second secon
Device configuration		Television SIMATIC PC station
🖳 Online & diagnostics		Device configuration
📍 Runtime settings	=	🖳 Online & diagnostics
 Screens 		🕴 🔻 📄 HMI_RT_2 [WinCC Unified P
🚔 Add new screen		🕎 Device configuration
01_Startscreen		📍 Runtime settings
02_TagArchive		👻 📄 Screens
03_AlarmArchive		🗳 Add new screen
🕨 🕨 🔁 HMI tags		D1_Startscreen
Connections		02_TagArchive
🖂 HMI alarms		🔲 03_AlarmArchive
Parameter set types		🕨 🕨 🔚 HMI tags
Logs		🔽 Connections
5 Scheduled tasks		🖂 HMI alarms
Scripts		Parameter set types
📑 Collaboration data		Logs
Cycles		5 Scheduled tasks
🔛 Text and graphic lists		Scripts

2. Add the "Trend Control" to the screen.

Figure 2-60



^

🔲 🛃

- 3. Select the Control and open its properties. ("Properties" tab)
- Configure the left value axis. ("Properties > General > Trend areas > [0] Trend area > Left value axis > [0] Values axis Y")
 Figure 2-61

Properties	s	Events	Texts					
12 🖻 🖿	Y							
Name			Stati	c value		Dynamization (0)		
-	[O] T	rend area	Tren	dArea_1				^
	► A	Auxiliary line co	lor 🗌 🛛	217, 217, 217		None		
	► B	ackground col	or 📃 🛛	255, 255, 255		None		
	• 6	Grid lines	Verti	ical maior orid lin	e	None		
	▼ L	eft value axis	1 ite	ms				
	•	 [0] Value axi 	s Y Left	value axis_1				
		Automati	ic sc		\checkmark	None		
		Automati	icall		\checkmark	None		-
		Auxiliary	ines 1 ite	ms				
		Axis color	r 🔤 (0, 0, 0		None		-
		Display n	ame			None		4
		Division e	ount 100			None		
		Label col	or 8	87, 87, 86	-	None	-	
		Label for	t					
		Mark cold	or i	28, 31, 48		None		
		Maximun	n sc 1500	0		None		
		Minimum	sc 0			None		
		Name	Left	value axis_1				
		 Output fr 	irmat Jil		_	None		~

 Configure the lower time axis. ("Properties > General > Trend areas > [0] Trend area > Time axis bottom > [0] Time axis")

ga. e _ e_				
Properties	Events Text	ts		
i2 🖻 🖿 🍸	/			
Name		Static value	Dynamization (0)	
	 [0] Time axis 	Bottom time axis_1		~
	Automatic sc		None	
	Axis color	0, 0, 0	None	
	Display name		None	
	End time	11/11/2020 4:45 PM	None	
	Label color	87, 87, 86	None	
	Label font			
	Mark color	28, 31, 48	None	_
	Measuring p	120	None	=
	Name	Bottom time axis_1		6
	Output format		None	(A)
	Scale mode	Numbers, Ticks	None	
	Show recent		None	
	Start time	11/11/2020 4:40 PM	None	
	Time range	Time interval	None	
	Time range b	Minute	None	
	Time range f	1	None	
	Visibility		None	

 Add as many trends as you want to display on log tags to the Trend area. ("Properties > General > Trend areas > [0] Trend area > Trends > <Add new>")

Figure 2-63	5							
Properties	Events	Texts						
12 🖻 🖿	Y						×⊥∓	
Name		Sta	atic value	Dynamization .		- I -	Trends	
-	[0] Trend area	Tre	endArea_1		1		11.00	
	 Auxiliary line col 	lor	217, 217, 217	None			Identifier	Aggregation mode
	Background col	or	255, 255, 255	None			[0] Trend - Y:	Time average stepped
	 Grid lines 	Ve	rtical major grid line	None			[1] Trend - Y:	Time average stepped
	Left value axis	1	items				<add new=""></add>	-0
	Main line color		217, 217, 217	None	=	= _		
	Name	Tre	endArea_1					
	Range proportion	on 1		None				
	Right value axis	0	items					
	Ruler					<u> </u>		
	Selected trend	Tre	ends[0]	None				
	Statistics ruler							
	Time axis botton	m 1.	items					
	Time axis top	0	items					
	 Trends 	2	items					
	▶ [0] Trei	6 Y:						
	▶ [1] Tre) Y:						
	 Visibility 		Image: A start and a start	None				
<					>		<	

- Open the settings for the first trend. ("[0] Trend - :Y")
- Assign a display name of your choice. ("[0] Trend > Display name")



Properties	Events	Texts			
i2 🖻 🖿 🍸					
Name		Stati	c value	Dynamization	
-	Trends	2 ite	ems		^
	▼ [0] Trend	Y:			
	AT rega	tion Time	e average steppe	d None	
	ernat	ive b	197, 232, 118	None	
	Backgro	und	147, 192, 31	None	
	Backgro	und f Tran	isparent	None	
	Connect	ion q			
	Data sor	urce Y		_	
	Display	name setF	oint speed	None	=
	Line cole	or 📃	255, 102, 0	one	
	Line type	e Soli	d 🖉	Allone	
	Line wid	th 1		None	
	Marker d	olor	0, 0, 0	None	
	Marker d	lime 3		None	
	Marker g	graphic		None	
	Markert	ype Non	e	None	
	Show log	gged		🛃 None	
	Time axi	s Bott	om time axis_1	None	
	Trend m	ode Inte	rpolated	None	
	Value as	dis Y Left	value axis_1	None	
	Visibility			None None	~

2 Engineering

9. Select "Logging tag" as the data source. Figure 2-65



10. Select the desired log tag as the data source.

Figure 2-66



11. Repeat steps 7 – 10 for the trends added in step 6.

2.1.5.2 Displaying the Alarm Log

To display an alarm log in Runtime, use the "Alarm Control". Follow the steps below for the configuration:

 Open the screen in which you want to display the alarm log. "Project tree > <device name> > Screens > <Screen name")



2. Add the "Alarm Control" to the screen.

Fig	ure 2-	68									
or	[SIMATIO	PC station]	HMI_RT_2 [Win	CC Unified PC RT]	► Screens ► 03	_AlarmArchive	_ @ =>	< 1	oolbox	- □ ►	
								0	Options		A
₫.:	£ € ∎	「日日本」	아 🏥 🕂 🗷 🖻	8888				Т			Too
	_			_			_	^ >	Basic objects		box
				U			×	2	Elements		
		Alarm clas	Origin	Area	Alarm text	Status text		Ŀ	Controls		夢
	1		<u> </u>					L.	1 🜔 🗉	^	ayou
	2							L.	Alarm Media player Screen	≡	7
	-							L.			Ð
								1			Tas
	-						- ()	4	na control rend Process companion control		ks
								¥,	My controls	~	
								Н	3		Lib
		œs œš		∎⁺ (≝+ (≝+		€		F			rarie
	_							L.	Plant Penertr		S
	_	₹¥							overview		Þ
	0										dd-i
											su

 Select the Control and open its properties. ("Properties" tab)

SIMATIC WinCC Unified System - Logging Article ID: 109782859, V1.0, 12/2021 4. Enable visibility for the "Show logged alarms" and "Show logged alarms and update" buttons in the toolbar. ("Properties >Miscellaneous > Toolbar > Elements > [1] / [2] Button > Enable")

Jure 2-69					
Properties Event	s Texts				
2 🖻 🖿 Y				$\times \pm \mp$	
Name	Static value	Dynamization		Elements	
 Miscellaneous 			^	Marketter Adult II.	
Alarm control				Identifier Visibility	
 Alarm statistic 				[U] Button - Show active alarms	
 Alarm Statistics. 				[1] Button - Show logged alarms	
Caption - Color	145, 147, 154	None		[2] Button - Show and update I	-2
Connection sta	. None		_	[3] Button - Show defined alarms	42
Current alarms	Not suppressed	None		[4] Button - Alarm statistics view	42
Displayed alarm	s Not suppressed, Lo	None		[5] Button - Alarm annunciator	42
Icon		None		[6] Button - First line	42
Label				[7] Button - Previous line	42
Name	Alarm control_1			[8] Button - Next line	42
Show recent		None		[9] Button - Last line	42
Status bar				[10] Button - Move to next ack	42
Tab index	0			[11] Button - Previous page	42
Time zone	-1	None		[12] Button - Next page	42
 Toolbar 				[13] Button - Single acknowled	42
Allow opera	. (🔼) 🛛 🗖	None		[14] Button - Group acknowled	42
A Backaroun	5, 255	None		[15] Button - Single confirm	42
Elements				[16] Button - Show recent	42
▶ Font	J			[17] Button - Info text setup	42
Show tooltips		None	~	[18] Button - Comments setup	42
			-	A CONTRACTOR OF	

5. Specify for the alarm source that it refers to the logged alarms. "Properties > General > Alarm source")

You can choose between the following alarm sources:

- "Logged alarms"
 - The alarm display shows the logged alarms.

<u>"Logged alarms updated"</u> The alarm display shows the logged alarms, which are updated at specified intervals.

P	rop	perties	Events	5	Texts					
ļ	E	3 🖹 Y								
	Na	me		Stati	c value		Dynamization	(0)		
	•	General								
		Alarm so	ource	Log	ged alarms u	pdated 🔫	None		•	
		Filter		Not	configured		-0			
	•	Appearance	е	Pend	ling alarms	(
	•	Format		Logo	ged alarms					
	•	Miscellaneo	ous	Logo	ged alarms u	pdated				
	•	Security		Alari	m statistics					
	•	Size and po	sition		in statistics]		4	
									-	
	<								>	

Configuring filters

1. Open the filter settings of the Control to display specific alarms/alarm classes.

2. Add a new filter.

Figure 2-71



3. Set the filter criterion (e.g., "Alarm class name"). ("Criterion" column)

|--|

	cincilon	3	Setting		
	Alarm class name 👻 Equ	al to	Select	t an alarm class>	
<add new=""></add>	Alarm class name	<u>^</u>			
	Alarm state				
	Status text				
	Area				
	Last modification				
	Incoming time				
	Outgoing time				
	Reset Time				
	Alarm text				
	Additional text 1				
	Additional text 2				
	Additional tast 3	\sim			

 Set the condition/operand for checking the filter criterion (e.g., "Equal to"). ("Operand" column)

Figure 2-73

AND / OR	Criterion		Operand		
	Alarm class name	-	Equal to	 Seleccan alarm class>	
<add new=""></add>			Equal to Not equal Includes Does not contain In Not in		
	_		_		

5. Select the setting for the criterion to be checked (e.g., the alarm class). ("Setting" column)

Figure 2-74

AND / OR	Criterion	Operand	Setting	\bigcirc	
	Alarm class name 💌	Equal to	 Ventilators 	Í 🌇 🔪	
<add new=""></add>			▼ 🛅 HMI_RT_2 [)	5	Y
			MI ala	1 TF	Name
					System Warni
				1	System Warnin
				. 🖙	Ventilators
				- 🖓	Warning
					WarningWithReset
			<	> <	

6. Repeat steps 2 - 5 if you want to add more filters.

- 7. If you have configured several filters, a Boolean linking of the individual filters is possible. ("AND / OR" column)
 - OR A criterion linked to OR must be fulfilled
 - AND All criteria linked with AND must be fulfilled

Figure 2-7	'5
------------	----

_

Alarn	n filter conf	iguration			×
	AND / OR	Criterion	Operand	Setting	
		Alarm class name	Equal to	Ventilators	
	AND 🔫	Alarm state 📃 💌	Equal to 💌	Incoming 💌	
	AND				
	OR				
				OK Cance	

8. Confirm the filter settings by clicking "OK".

Aları	n filter cont	figuration			×
	AND / OR	Criterion	Operand	Setting	
		Alarm class name	Equal to	Ventilators	
	OR	Alarm state	Equal to	Incoming	
	<add new=""></add>				
					OK Cancel
_					(Ŭ)

2.1.6 Exporting a Log as a *.csv File

2.1.6.1 Using Code Snippets

Exporting a tag log

1. Open the desired event for the log export (e.g., "Press" a button).

Figure 2-77						
exportTagLog1AsCSV [Button]		on]	🔍 Properties	s 🚺 Info 🤢 🗓 Di	iagnostics	
Properties Events Texts						
		± ∓ 🛅 ×				
Activated		Name		Value		
Deactived		<add function=""></add>				
Click left mo	use button					
Press key						
Release key						
Press						
Relea	0					
Click	se bu					

2. Click the button to convert a function list into a JS script in the function list menu bar. Figure 2-78

exportTagLog1AsCSV [But	ton]	🔍 Properties 🚺 Info 🚺 🗓 Diagnostics	1 🗆 🔻
Properties Events	Texts		
	± ∓ 👪 🗙		
Activated	Name	Value	
Deactived	<add< th=""><th></th><th></th></add<>		
Click left mouse button			
Press key			
Release key			
Press			
Release			
Click right mouse bu			

- 3. Open the context menu for the code snippets.
- 4. In the "HMI Runtime" area under "Tag logging", select the code snippet "Export tag log as CSV".

Figure 2-79

exportTagLog1AsCSV [But	ton]	Rroperties	nfo 追 🗓 Diagnostics 👘 🗖 🗏 🗸
Properties Events	Texts		
	🔚 Global definition 🚼 Asynchronous	🔢 📲 🗙 🍋 😡	
Activated	<pre>1 export function exportTagLogL 2</pre>	AsCSV_OnDown(item, x, y	<pre>/, modifiers, trigger) {</pre>
Deactived	2		
Click left mouse	4 Spippets M HM Ruptime	Alarming	
Press key		Alarm Logging	
Release key		Connections	
Press		Database access	
Release		Data set	
Click right mous		File System	
•		Parameter Set	
-		Plant Model	
		Screen 🕨	
		Tag 🕨	
		Tag Logging 🔹 🕨	Read log
		Trace	Export tag log as CSV
		Set Language	Add Comment to log tag
			Correct logged tag value (
		l. l.	

A code block is added to the editor area.

- 5. Set the file path and name.
- 6. Set the start and end time for the log export.
- 7. Set the delimiter for the *.csv file.

Figure 2-80



- 8. Define the log tag and the associated data that you want to read out and write to the *.csv file.
 - Figure 2-81



 The script is designed to read out and export a log tag. Extend the code to include more log tags.

Exporting an alarm log

 Open the desired event of a screen object for log export (e.g., "Press" a button). Figure 2-82

exportAlarmLog1AsCSV [Button]			🔍 Propertie	s 🚺 Info	 Diagnostics 	┛▤▾
Properties	Events	Texts				
	1	∓ 🖥 ×				
Activated		Name		Value		
Deactived		<add function=""></add>				
Click left mou	use					
Press key						
Release key						
Press						
Relea						
Click)ıs					

 Click the button to convert a function list into a JS script in the function list menu bar. Figure 2-83

exportAlarmLog1AsCS	V [Button]	Rroperties	🗓 Info 👔 🗓 Diagnostics 👘 🗖 🖃 🦷
Properties Ever	nts Texts		
	± ∓ 🗟 🏹 🛛		
Activated	Name Name	Valu	e
Deactived	<add fu<="" td=""><td></td><td></td></add>		
Click left mouse	<u> </u>		
Press key			
Release key			
Press			
Release			
Click right mous			

- 3. Open the context menu for the code snippets.
- 4. In the "HMI Runtime" area under "Alarm logging", select the code snippet "Export alarm log as CSV".

Figure 2-84



A code block is added to the editor area.

- 5. Set the file path and name.
- 6. Set the start and end time for the log export.
- 7. Set the language for the exported log alarm.
- 8. Set the delimiter for the *.csv file.

Figure 2-85

	🐺 🚟 Global definition 📰 Asynchronous 🔢 📲 🗙 🍋 😡
Activated	<pre>1 export function exportTagLoglAsCSV_OnDown(item, x, y, modifiers, trigger) { 2</pre>
Deactived	2 3 // Please note, the format of a file path is device and operating system specific.
Click left mouse	4 // You need to adapt the given path to your environment.
Press key	5 // Example for a Unified Comfort device (Linux OS): /home/userl/data.dat
Release key	6 // Example for a Unified DC-based device (MS Windows OS): C:\User-\Public\data.dat
Press	7 let fileName = "D:\\UnifiedArchive\\AlarmLogFile.csv";
Release	<pre>9 let start = new Date("2021-03-24T00:00:002"):</pre>
Click right mous	10 let end = new Date("2021-03-24T23:00:00Z"); 6
	12 let languageID = 1033;
	14 let delimiter = ",";

9. Define which data you want to read out and write into the *.csv file (e.g., "Alarm ID", "Alarm class name", "Alarm status").

Figure 2-86

ΓI	Jui	e 2-00
		Global definition 🟗 Asynchronous 🔢 🌇 🗙 😋 😡
	13	e e Nord-Materia M.
	15	let csvData = "ID" + delimiter + "AlarmClassName" + delimiter + "State\n";
	10 17	<pre>ret promise1 = nrikuntime.stafmLoggIng.keau(start, enu, , languagelb); promise1.then((loggedAlarmStateArray) => {</pre>
	18	for (let loggedAlarmState of loggedAlarmStateArray) {
	19	csvData += loggedAlarmState.ID + delimiter + loggedAlarmState.AlarmClassName + delimiter + loggedAlarmState.State + "\n";
	20	ł

Confirmation via Log Export

The code snippets for exporting logs use the built-in trace() function of Runtime to output errors or the status of the export. You can view them via the "RTILtraceViewer.exe" tool.

A description of how to use the tool can be found in Section 2.3.1 Using RTIL Trace Viewer.

2.1.6.2 Automatic Export

1. Open the task scheduler in the project navigation. Figure 2-87



- 2. Add a new task with a name of your choice.
- 3. Select a trigger of your choice (e.g., "Daily").

Figure 2-88

PcStationUnified_	2 [SIMATIC PC station	n] ▶ HMI_RT_3 [WinCC Unified Scad	la RT] → Scheduled tasks 🛛 🗖 🗮 🗙
Name 5 ExportTagLogTag1 <add rews<="" th=""><th>Trigger Daily T500ms T1s T2s T5s Daily Weeny Monthly Yearly Once Tags Alarms Y</th><th>Description Execute every day at 1:58:26 PM.</th><th>Comment</th></add>	Trigger Daily T500ms T1s T2s T5s Daily Weeny Monthly Yearly Once Tags Alarms Y	Description Execute every day at 1:58:26 PM.	Comment

4. Open the "Update" task event.

ExportTagLogTag1 [Task]		Roperties	🗓 Info 👔 🗓 Diagnostics	
Properties Events	Texts			
1 ±	∓ 🔁 ×			
Update	Name	Val	ue	
	<add function=""></add>			

2 Engineering

 Click the button to convert a function list into a JS script in the function list menu bar. Figure 2-90

ExportTagLogTag1 [T	ask]	Richard Properties	🗓 Info 🧯 🖥 Diagnostics	┛▤▾
Properties Eve	ents Texts			
	± ∓ ™ ×			
Update	Name Name		Value	
	<add< td=""><td></td><td></td><td></td></add<>			

Create a script to export a tag/alarm log using the corresponding snippet (see Section <u>2.1.6.1</u>).

2.1.6.3 Convert a Timestamp in Excel

- 1. Open the exported log file.
- 2. Insert a new column.

Figure 2-91

F	ile Home Insert Page	Calibri ~ 11 ~ A^ /	a" \$ ~ %	9 🖽 > 👌	WinCC Unif	ß	₽
B	• • • ×	B I ≡ 🎸 • <u>A</u> •	00. 00 . ▼ <u>+</u> 0 0€ 00. ▼ <u>+</u>	4			~
	A B	X Cut	D	E	F	G	
1	pk_TimeStamp pk_fk_Id	Ба -	lue				
2	1.32606E+17	L <u>말 C</u> opy	0				
3	1.32606E+17	Paste Options:	0				
4	1.32606E+17	۳۵-	580				
5	1.32606E+17		0				
6	1.32606E+17	Paste Special	10				
7	1.32606E+17	-1	20				
8	1.32606E+17	Insert	2 35				
9	1.32606E+17	Delete	45				
	4 4V	-	-				

- 3. Select the column next to the first timestamp.
- 4. Enter the following formula:

```
= (< Cell name >/60/60/24/1000000) - 109205
```

Figure 2-92

Fi	le Home Ins	ert Page Layoı	Formulas Data	Review View	Help WinCC	Unif 🛛 🖻	
SU	- MI	× < .	fx =(A2/60/60	0/24/10000000)	-109205	•	~
	А	В	с	D	E	F	G 🔺
1	pk_TimeStamp		pk_fk_Id	Quality	Value		
2	1.32606E+17	-(A2/60/60/24/	10000000)-109205	5	0		
3	1.32606E+17		2	24	0		
4	1.32606E+17		1	192	580		
5	1 205067-17		2	100	C		

5. Copy the formula to the other cells by dragging the green square.

Figure 2-93

	А	В	с	D	E	F	G	
1	pk_TimeStamp		pk_fk_Id	Quality	Value			
2	1.32606E+17	44274.56685	1	24	0			ш
3	1.32606E+17		5 2	24	0			
4	1.32606E+17		1	192	580			
5	1.32606E+17		2	192	0			
6	1.32606E+17		2	192	10			
7	1.32606E+17		2	192	20			
8	1.32606E+17		2	192	35			
9	1.32606E+17		2	192	45			
10	1.32606E+17		1	192	680			
11	1.32606E+17		2	192	60			
	4 90 00 00 17		1	·	001			

6. Select the column.

7. Open the format settings of the column via the context menu "Format Cells...".

Figure 2-94

B1	· · · · · ·	× ✓	Calibri 🗸 11 🗸	A^ A* \$ ~ 9	6 🤊 🖽		~
	А		B I ≡ 🔗 - 🛛	4 - 💮 - 58	.00 .00	F	G
1	pk_TimeStamp		lpk fk Id	Quality	Value		
2	1.32606E+17	4.566	👗 Cu <u>t</u>	24	0		
3	1.32606E+17	44274.566		24	0		
4	1.32606E+17	44274.566		192	580		
5	1.32606E+17	44274.566	Paste Options	: 192	0		
6	1.32606E+17	44274.568	rên	192	10		
7	1.32606E+17	44274.568		192	20		
8	1.32606E+17	44274.568	Paste Special	192	35		
9	1.32606E+17	44274.568	Incort	192	45		
10	1.32606E+17	44274.568	insen	192	680		
11	1.32606E+17	44274.568	<u>D</u> elete	192	60		
12	1.32606E+17	44274.568	Clear Contents	192	880		
13	1.32606E+17	44274.568		192	70		
14	1.32606E+17	44274.568	Eormat Cells	192	980		
	1 2060/15/17	AA274.5/1		() 107	75		

- 8. Change the settings in the "Date" category to a date-time type (e.g., 3/14/12 1:30 PM).
- 9. Click "OK" to confirm your input.

Figure 2-95

General Number Currency Accounting Date Time Percentage Fraction Scientific	Sample	
	Mar-12 March-12 March-14, 2012 3/14/12 1:30 PM	^
Special Sustem	M M-12	~
Custom	Locale (location):	
	English (United States)	\sim
Date formats display da an asterisk (*) respond t operating system. Form	te and time serial numbers as date values. Date formats that begin wit o changes in regional date and time settings that are specified for the ats without an asterisk are not affected by operating system settings.	th
	OK Cance	el

The timestamp is now displayed as a date-time format in UTC time. Figure 2-96

	А	В	С	D	E	
1	pk_TimeStamp		pk_fk_Id	Quality	Value	
2	1.32606E+17	3/19/21 1:36 PM	1	24	0	
11.1	226261	- Inc. 104, 410 - 10	2	2	· · · · ·	

2 Engineering
2.2 Operation

2.2.1 Displaying/Analyzing Log Tags in Trend Control

Displaying log tags in Trend Control

- 1. Open your screen with the Trend Control for the logged tags.
- 2. Display the ruler via the "Ruler" button.
- 3. Click the "Zoom areas" icon and then click in the area of the Trend Control that you want to zoom in on.
- 4. Click the "Original view" button to reset the zoom settings.

Figure 2-97



Analyzing log tags in Trend Control

- 1. Click the "Start stop" button on the toolbar to stop updating the Trend Control.
- View the change in the first/last data record using the buttons "First trend" and "Last trend". Figure 2-98



- 3. *Optional:* Switch between the previous/next record using the "Previous Trend" and "Next Trend".
- 4. Click the ruler, hold down the left mouse button, and move the ruler to the position of your choice.

The current values are displayed next to the ruler, and the current timestamp at which the ruler is located is displayed in the ruler label.

Figure 2-99



2.2.2 Loading/Filtering Log Alarms in Alarm Display

Loading log alarms

- 1. Open the screen with the alarm display for the logged alarms.
- Click the "Show logged alarms" button to load the current log alarms Figure 2-100

					$\Box \times$
	Alarm class	Alarm text	Alarm state	Raise time	Status text
1	Ventilators	Ventilator 1 runs with high spe	Raised	11/12/20 10:38:59 AN	Incoming
2	Ventilators	Ventilator 1 runs with Maximu	Raised	11/12/20 10:38:59 AN	Incoming
3					
4	-				
5		A ,⊨ ■ † ■ † ■ + ■			
3	T T				

Updating the Alarm Display

If you have selected "logged alarms" as the alarm source in the Control settings, the alarm display is not automatically updated.

Follow these steps to update your alarm display:

1. Click the "Show and update logged alarms" button to update the log alarm.

Figure 2-101



Changing/Configuring Filters in Runtime

 Click the "Selection display" button to open the filter settings. Figure 2-102

					$\Box \times$		
	Alarm class	Alarm text	Alarm state	Raise time	Status text		
1	Ventilators	Ventilator 1 runs with high spe	Raised	11/12/20 10:38:59 AN	Incoming		
2	Ventilators	Ventilator 1 runs with Maximu	Raised	11/12/20 10:38:59 AM	Incoming		
3							
4							
5							
3 L							

- 2. Select the line of the filter and change the properties.
- 3. You can delete the settings via the "Remove" button.
- 4. You can change the order and condition by moving a criterion via the "Up" button.
- 5. Confirm the filter settings by clicking the "Apply" button.
- 6. Close the filter dialog by clicking the "OK" button.
- 7. You can discard the changes by clicking the "Cancel" button.

Figure	2-103
--------	-------

Alarm filter					×
And /	Or	Criterion		Operand	Setting
	-\ 🂾	ame of alarm class		Equal to	Ventilators
And	1	Alarm state	V	Equal to	Raised
<add></add>					
<					
Filter :					Up Down Remove
1	Alarm	ClassName = 'Ventilators' AND Stat	e = 1		
3					
4					
6					
					Apply OK Cancel

2.3 Troubleshooting

2.3.1 Using RTIL Trace Viewer

The RTIL Trace Viewer records the activities of Runtime. With this tool, it is possible to track activities of scripts.

- 1. Open File Explorer.
- 2. Open the installation directory of WinCC Unified.
 - Default: C:\Program Files\Siemens\Automation\WinCCUnified
- 3. Start the RTIL Trace Viewer.
 - Path: <Installation directory>\bin\ RTILtraceViewer.exe

Figure 2-104



 Set the filter to the subsystem script engine. ("Menu Bar >> Filter > Subsystem >Script FW") Figure 2-105

3		-												
😵 Trac	eViewer										-			×
File Ed	it View Co	lumns	Filter Tools Abo	ut										
i		11 💐	Host) }	• 🖳 ▼					P → Search in traces (Ctrl+F)			7	
#	o Syster	n 🖌	Application	•	Class filter	1	I Timestamp ∇	1		Message				•
988	8 Projec	t Gf	Subsystem	•	Clear filter	Г	2021.03.24 09:37:38.303724	Tra	ace():	Read failed, Error: ReferenceEr	ror: L	ogged [.]	та	
988	7 Projec	t Gf	Module	•	AC	L	2021.03.24 09:37:38.300757	Tra	ace():	Tag Name : Ventilator1Data_actu	al Spee	d:v1_	ac	
988	5 Projec	t Gf	Severity	•	ACS		2021.03.24 09:37:36.022449	Tra	ace():	Read failed, Error: ReferenceEr	ror: L	ogged	та	
988	4 Projec	t Gf	Flags			Γ	2021.03.24 09:37:36.013301	Tra	ace():	Tag Name : Ventilator1Data_act	alspee	d:v1_	ac	
531	1 Projec	t Gf	Process/Thread			L	2021.03.23 17:21:54.694331	Tra	ace():	Write file finished successful	y Scri	ptCon	te	
531	0 Projec	t Gf	Flocess/ Initeau	ĺ	SCS		2021.03.23 17:21:54.681240	Tra	ace():	Tag Name : Ventilator1Data_actu	alSpee	d:V1_	ac	
522	6 Projec	t Gf	Message		SCSCommon		2021.03.23 17:20:46.918626	Tra	ace():	Write file finished successful	y Scri	ptCon	te	
522	5 Projec	t Gf	Clear all filters		✓ ScriptFW		2021.03.23 17:20:46.906531	тга	ace():	Tag Name : Ventilator1Data_act	alspee	d:v1_	ac	•
				_	StorageFramewor									
Trace	<pre>(): Read f Context:</pre>	ailed, HMT RI	, Error: Referen E 3::Curves	ceE	SysFctPluginHost	h	ffined							
Modul	e: /screen	modu	les/pwMain/HMI_R	T_3	SystemEunction	7	7 //							
Funce	ron: expor	LTAGEC	bg1ASCSV_ONDOWN	(ca	Taglogging	2								
55 -60	100 +				NCC									-
100019	100 traces				VCS	JL.								1

 Set the filter to the "ScriptHMIRuntime" module. ("Menu Bar >> Filter > Module > ScriptHMIRuntime")

Figure 2-106

😵 TraceViewer	Clear filter	– – ×
File Edit View Columns Filter Tools About Image: Column Signature Image: Column Signature	AccessControl AccessControlSource	P• Search in traces (Ctrl+F)
# o System A Application	SRI	mestamp ∇ , Message
9888 Project Gf. Subsystem 9887 Project Gf Module	Screen	09:37:38.303724 Trace(): Read failed, Error: ReferenceError: LoggedTa_ 09:37:38.300757 Trace(): Tag Name : Ventilator1Data_actualSpeed:V1_ac_
9885 Project Gf Severity 9884 Project Gf	ScriptDeviceObjectModel	09:37:36.022449 Trace(): Read failed, Error: ReferenceError: LoggedTa_ 09:37:36.013301 Trace(): Tag Name : Ventilator1Data_actualSpeed:V1_ac_
5311 Project Gf 5310 Project Gf Flags Process/Thread →	 ScriptHMIRuntime ScriptPaCoObjectModel 	17:21:54.694331 Trace(): Write file finished successfully ScriptConte. 17:21:54.681240 Trace(): Tag Name : Ventilator1Data_actualSpeed:V1_ac.
5226 Project Gf Message	Server Service	17:20:46.918626 Trace(): Write file finished successfully ScriptConte_ 17:20:46.906531 Trace(): Tag Name : Ventilator1Data_actualSpeed:V1_ac_ •
Trace(): Read failed, Error: References ScriptContext: HMIRT_3::Curves Module: /Screen_modules/pWMain/HMIRT_3 Function: exportragLogLASCSV_OnDown (ca	CpmConfigurationReader CpmRuntimeServiceBL DeltaDownload FullDownload	

- 6. Sort the list in descending order by timestamp. (Click column name "Timestamp")
- 7. Open the log export alarm by double-clicking the alarm line to display more information.
- 8. In the detail area below the alarm table, the corresponding alarm text is displayed.

olumns Filter Tools	s About			
	☆ � ⊠ -			
			6 Search in traces (C	trl+F) 🗸 🗸
m Application	Subsystem* Module*	I Timestamp	Message	-
ct GfxRTS(22)	ScriptFW ScriptHMIRuntime	2021.03.24 09:37:38.303724	Trace(): Read failed, Error: Re	ferenceError: LoggedTa
t GfxRTS(22)	ScriptFW ScriptHMIRuntime	2021.03.24 09:37:38.300757	Trace(): Tag Name : Ventilator:	Data_actualSpeed:V1_ac
ct GfxRTS(22)	ScriptFW ScriptHMIRuntime	2021.03.24 09:37:36.022449	Trace(): Read failed, Error: Re	ferenceError: LoggedTa
ct GfxRTS(22)	ScriptFW ScriptHMIRuntime	2021.03.24 09:37:36.013301	Trace(): Tag Name :	Data_actualSpeed:V1_ac
t GfxRTS(22)	ScriptFW ScriptHMIRuntime	2021.03.23 17:21:54.694331	Trace(): Write file 🖊 🏹 🕅	ccessfully ScriptConte
ct GfxRTS(22)	ScriptFW ScriptHMIRuntime	2021.03.23 17:21:54.681240	Trace(): Tag Name : 🛛 🗾 🎵	.Data_actualSpeed:V1_ac
t GfxRTS(22)	ScriptFW ScriptHMIRuntime	2021.03.23 17:20:46.918626	Trace(): Write file fi	ccessfully ScriptConte
t GfxRTS(22)	ScriptFW ScriptHMIRuntime	2021.03.23 17:20:46.906531	Trace(): Tag Name : Ventilator:	Data_actualSpeed:V1_ac
	ct GfxRTS(22) ct GfxRTS(22) ct GfxRTS(22) ct GfxRTS(22) ct GfxRTS(22) ct GfxRTS(22) ct GfxRTS(22) ct GfxRTS(22) ct GfxRTS(22) failed, Error: Re	cf of ARTS(22) ScriptFW ScriptHMIRuntime ct of ARTS(22) ScriptFW ScriptHMIRuntime ct of ARTS(22) ScriptFW ScriptHMIRUntime of ARTS(22) ScriptFW ScriptHMIRUntime of ARTS(22) ScriptFW ScriptHMIRUntime ct of ARTS(22) ScriptFW ScriptHMIRUntime ct of ARTS(22) ScriptFW ScriptHMIRUntime of ARTS(22) ScriptFW ScriptHMIRUntime failed. Fror: ReferenceFror: LoogedTas 1	Important Service Service	ct GFARTS(22) ScriptEW ScriptEMTRuntime 2021.03.24 09:37:38.303724 Trace(): Read failed, Error: ReferenceError: Incomparent is not defined ct GFARTS(22) ScriptEW ScriptEMTRuntime 2021.03.24 09:37:38.303724 Trace(): Read failed, Error: ReferenceError: ReferenceError: Incomparent is not defined ct GFARTS(22) ScriptEW ScriptEMTRUNTIME 2021.03.24 09:37:36.0022449 Trace(): Read failed, Error: ReferenceError: Refere



How do I use the RTIL Trace Viewer correctly?

A detailed description with examples of how to use the "RTIL Trace Viewer" tool can be found in the application example "SIMATIC WinCC Unified – Tips and Tricks for Script Creation (JavaScript)".

https://support.industry.siemens.com/cs/ww/en/view/109758536

2.3.2 Check necessary Permissions for the Log Directory

This step is only necessary in the event of an error or if you have not configured the log directory using the "WinCC Unified Configuration" tool.

The logging of the WinCC Unified Runtime PC is controlled via the service user "NTService\WCCILScsService".

In order to smooth and ensure error-free logging, the service user requires unrestricted read and write access to the directory in which the log is stored. Therefore, check whether this person has sufficient permissions for your configured log directory (Runtime settings/storage location of the tag/alarm log).

Figure 2-108



You can assign the read and write permissions for the "WCCILScsService" user with the "WinCC Unified Configuration" tool (Section 2.1.2) or manually assign them to the directory via the properties (following chapter " Manual Assignment of Write Permissions to Log Directory ").

Note

Manual Assignment of Write Permissions to Log Directory

- 1. Open the parent directory of the desired log directory using the File Explorer (e.g., C:\)
- Create a new folder for the log directory (e.g., myNewDatabase, ("Context menu > Add new folder"))
- 3. Open the corresponding shortcut menu (right-click the folder name).
- 4. Open the properties of the folder. ("Context menu > Properties")

Figure 2-109



5. Click the "Security" tab.

Figure 2-110

General Sharing Security Previous Versions Customize	📜 MyNewDa	atabase Properties	×
	General Sha	ring Security Previous Versions Customize	

 Click the "Edit..." button. A dialog box for managing permissions opens. Figure 2-111



7. Click the "Add..." button to add a new permission for a group/user.

Figure 2-112	
Permissions for MyNewDatabase	×
Security	
Object name: C:\MyNewDatabase	
Group or user names:	
Authentifizierte Benutzer	
SYSTEM	
Administratoren (VMSITRAIN\Administratoren)	
Add	
Provisional Author/Frints	

A dialog box opens for selecting users or groups.

- 8. Enter the service user "NTService\WCCILScsService".
- 9. Check the name for correctness using the "Check Names" button.

Figure 2-113	
Select Users or Groups	×
Select this object type:	
Users, Groups, or Built-in security principals	Object Types
From this location:	
Enter the object names to select (example)	
NT Service\WCCILScsService	Check Names
Advanced	OK Cancel

10. Click "OK" to confirm your input.

3 Useful Information

3.1 Fundamentals

3.1.1 Licensing

Figure 3-1



The licensing depends on the requirements.

Licenses

No additional license for logging is required for the Unified Comfort Panels. You can only save the log in the database format "SQLite".

In the WinCC Unified Runtime PC, it is possible to save the log in the database formats "SQLite" and "Microsoft SQL Server". For "Microsoft SQL Server", you must purchase the SCADA option with the associated "WinCC Unified Database Storage" license.

For licensing of the logging tags, one (or more) "WinCC Unified Logging Tags" licenses is also needed.

Use the Automation License Manager (ALM) to transfer the licenses to the target system via a license server or storage device.

Number of logging tags

The number of logging tags can be increased by 100; 500; 1,000; 5,000; 10,000; 30,000 by purchasing additional licenses. The "Logging Tags" licenses are additive.

With SQLite, you can implement a maximum of 5000 logging tags. Microsoft SQL Server, on the other hand, is scalable to the maximum number of PowerTags.

3.1.2 Log/Log Segment Size

3.1.2.1 Overview

The size of the log depends on the type of log (tag or alarm log) and the selected settings. In the log settings, the maximum log segment, the log size, and the time period can be defined. The maximum log segment and log size is limited to the maximum available space of the storage device on which it is stored.

Calculation of log size

The size of a log is the sum of the storage requirements of all log segments together.

Size
$$log_{Total} = \sum_{1}^{n} Size \ log \ segment_{n}$$

 $n = Number \ of \ segments$

The size of a log segment results from the number of entries and their size as well as the offset, which is stored for each log segment.

Size log segment =
$$Offset_{segment} + \sum_{1}^{m} Size entry_{m}$$

m = number of entries

Calculation of segment size

Note For SQLite, the segment size of a log is always an integer multiple of 4 MB. So, if you configure a segment size of 7 MB, the actual segment size is 8 MB.

For MS SQL, the smallest segment size of the log is 3 MB.

Offset of log segment

The offset for a segment results from additionally stored information on the property parameters, such as the max. segment size. Depending on the database type, more (Microsoft SQL Server) or less (SQLite) additional information is stored for the segment. Therefore, this is also different in size.

Size of log entries

The size of a data entry is determined by the logging settings and the data type of the log tag. The size of the log entry is determined by the logging settings and the properties of the alarm to be logged,

such as the length of the alarm text.

3.1.2.2 Tag logging

During tag logging, the individual tag values are written with a timestamp to the current log segment.

Offset per log segment

Depending on the database type, the following values result for the offset per log segment when logging tags.

- <u>SQLite</u>: ~ 0.5 MB
- <u>Microsoft SQL Server</u>: ~ 5.0 MB

Log tag entry size

The size of the entry of a log tag is largely determined by the data type. Depending on the data type, the following memory requirements result:

- <u>32bit value</u>; e.g., Bool, Int, LReal, etc. ~ 80 bytes/entry
 <u>64bit value</u>; e.g., LInt, DateTime, LTime, etc. ~ 106 bytes/entry
- <u>Text value (arbitrary length);</u> e.g., WString, WChar: ~ 586 bytes/entry

3.1.2.3 Alarm Logging

During alarm logging, the individual alarms with a timestamp and alarm text are written to the current log segment. Depending on the logging languages configured in the Runtime settings, the alarm texts are logged in different languages.

Offset per log segment

Depending on the database type, the following sizes result in the offset per archive segment when logging alarms.

- SQLite: not significant
- Microsoft SQL Server: ~ 3.5 MB

Log alarm entry size

Figure 3-2



The size of a log alarm entry is largely determined by a fixed size per alarm entry, a size per language entry, and the number of languages to be logged, as well as the size of the stored alarm texts.

The size can be estimated as follows:

Size Message entry_{Segment}

- = basic size entry
- + (Size Language entry * Number of logging languages -1)
- + size of all alarm texts

Entry base size

The base size defines the size of an alarm entry without alarm text. The size depends on the database type and is fixed:

- <u>SQLite</u>: ~ 0.3 MB
- <u>Microsoft SQL Server</u>: ~ 2 MB

Size of language entry and number of logging languages

For each additional logging language, a log entry expands by the size of a language entry. The total size is therefore dependent on the number of logging languages and the size of a language entry.

The total size is only taken into account if an alarm is logged in more than one language.

The size of the language entry depends on the database type and is:

- <u>SQLite</u>: ~ 0.1 MB
- <u>Microsoft SQL Server</u>: ~ 0.2 MB



The size resulting from the alarm texts is calculated from the number of logging languages, the number of alarm texts, the number of characters in the alarm text, and the number of bytes per character.

The size can be estimated as follows:

Size of all alarm texts of an entry

= number of logging languages * number of alarm texts * text length * bytes per character

Number of logging languages

This parameter includes the numerical number of logging languages activated in the Runtime settings.

Number of alarm texts

This parameter includes the numerical number of configured alarm and additional texts.

Text length

This parameter includes the number of characters of an alarm/additional text.

The text length can vary between the individual alarm/additional texts, as well as the texts in the individual logging languages. For simplification, the text with the most characters can be used for the rollover calculation.

A separate calculation of text length depending on language and type of text is also possible.

Bytes per character

This parameter includes the number of bytes per character. This depends on the language and the database type. Rule:

- <u>SQLite</u>: ~ 1 byte
- <u>Microsoft SQL Server</u>: ~ 2 bytes

Symbols may require more memory.

3.1.3 SQLite vs. Microsoft SQL Server

Table 3-1

Name	SQLite	Microsoft SQL Server
Primary database model	Relational DBMS	Relational DBMS
Developer, launch year	Dwayne Richard Hipp, 2000	Microsoft, 1989
License	Open source	Commercial
Implementation language	С	C++
Server operating systems	Serverless	Microsoft, Linux
Official website	www.SQLite.org	www.microsoft.com/en-us/SQL- server
Server-side scripts	No	Transact SQL, .NET languages, R, Python and Java (with SQL Server 2019)
Authorization concept	No	User authorization concept according to SQL standard
Availability	Comfort Unified Panels WinCC Unified Runtime PC	WinCC Unified Runtime PC
Logging Tags	Up to 5,000	Max. PowerTags

3.1.4 Performance Features

Table 3-2

Name	Unified Comfort 7-12"	Unified Comfort 15-22"
Number of logs	50	50
Number of log tags, SQLite	5000	5000
Number of log tags, Microsoft SQL	-	-
Number of entries per log (incl. all log segments)	500,000	500,000

Table 3-3

Name	WinCC Unified Runtime PC
Number of logs	1000
Number of log tags, SQLite	5000
Number of log tags, Microsoft SQL	Max. number of PowerTags (depending on "Logging Tags") license)
Number of entries per log (incl. all log segments)	500,000
Number of entries per second	30,000

3.2 Tips & Tricks for Log Configuration

3.2.1 General

The logging is limited by the read/write speed and the size of the storage device. Therefore, select a suitable storage device.

Influence writing cycle

Depending on the logging mode, each log has its own write cycle.

Therefore, it is recommended to store logs on different storage devices depending on the write cycle.

Additionally, separate slow and fast logging and store them separately on different storage devices.

For fast logging, SSD hard disks are best, for slow logging you can also use HDD hard disks.

Required memory

The storage requirements of a log can be estimated via the configuration of the log and the projected data points. This allows the maximum size of a

log segment/log size to be determined and, therefore, the necessary storage requirements.

How to estimate the size of a log segment/log is described in Section 3.1.2.

Prevent data loss

In the event of power failures, a UPS is recommended for the PC station, as failure to close and disconnect the database correctly may result in data loss, or in the worst case, destruction of the database.

If a storage device is removed without first stopping logging, this also leads to data loss, or in the worst case to the destruction of the database.

The in-memory buffer of WinCC Unified is 8 MB if the storage device is temporarily not available.

Availability data

If the configured size or the defined period of a segment is reached, the old segment data is deleted. This affects what data is available for analysis in Runtime.

3.2.2 Configuration

- Fast values trigger/cycle-dependent in own logs
 - Separate logs for different write cycles, so each log has its own write cycle \rightarrow Allows performance to be achieved
 - Logs with high write cycles fill faster, so segments are backed up and deleted sooner.
 - → For mixed values, the slow values are also no longer available for immediate display.
 - → If the user wants to retrieve this data, segments from the Backup can be restored.
- Separate slow values from fast values
 - Logs with longer write cycles grow more slowly, so the logged data is available in Runtime for a longer time. They are backed up and deleted less often.

3.2.3 Log/Log Segment Size

For the size of logs and log segments, the following applies:

- Larger segments are backed up less frequently, but require more time to back up.
 → Logged data is available in Runtime for a longer time.
- A maximum of 5000 segments can be active (online) during system runtime.
- With SQLite, the limit for log and segment size is limited by the underlying file system.
- For a database, the memory requirement should be at least the configured size of the database + 1x segment size (to allow for active backup).
- The free available space on an HDD should be at least 3x the segment size.

3.3 Access via "DB Browser for SQLite"

3.3.1 Overview

With the program "DB Browser for SQLite" it is possible to view, evaluate, modify and extend the existing logs of the database type "SQLite" and to export them as *.csv file independently of the WinCC Unified Runtime.

Figure 3-4

BB Brother for SQLite - D:	TLG108\HMI_RT_3_TLG108_20210319_132614.db3	×
File Edit View Iools Her New Database Open Database Write Chang Database Structure Browse Data Edit Praomas Exe	nges @Revert Changes @Open Project @Save Project @Attach Database	» ۲
Create Table Create Table Create Table Create Table Create Table Create Table Create Table Create Table Create Table Create Table Create Table Create Table Create Table	6 Mode: Text V V F C C C C C C C C C C C C C C C C C	Apply
 Versionint/ormation Indices (0) Views (0) Triggers (0) Tables (5) Indices (4) Views (0) Triggers (0) 	Identity Public Identity Size Name Commit Last modified Size SQL Log Plot Remote	UTF-8
1 Create new database	 Open existing database Add database 	
Database Structure View	5 Data view 6 Execute SQL commands	
7 Context menu table	8 Added databases	

3.3.2 Download

The "DB Browser for SQLite" program is not supplied with WinCC Unified Engineering/Runtime. You can download the current version free of charge from the following website: <u>https://SQLitebrowser.org/</u>

3.3.3 Log Access

Open log database

1. Open the desired archive database via the "Open Database" button.

Figure 3-5

. igaio o o				
DB Browser for SQLite			- 0	×
File Edit View Tools Help				
New Database	nanges 🔯 Rever	t Chang	Generation Project Generation Attach Database	>>
Database Structure Browse Data Edi	Execute SQL		dit Database Cell	₽×
Create Table Create Index	Delete Table	**	Mode: Text 🗸 🔯	
Name	Туре	Scł	-	

A dialog box opens for selecting the database.

- 2. Select the desired tag/alarm log.
- 3. Confirm your selection by clicking the "Open" button.

Figure 3-6



4. The selected database is displayed with its associated tables and indexes in the Database Structure View.

Figure 3-7



Add log database

1. Use the "Attach Database" button to add a database of a tag/alarm log.

Figure 3-8

0					
DB Browser for SQLite - D:\UnifiedArchive\HMI_RT_3	3_TagLoggingDatab	ase.db3		-	×
File Edit View Tools Help					
New Database Open Database	hanges 🔯 Rever	t Changes 🎯 Open Project	😭 Save Project	🗟 Attach Database	**
Database Structure Browse Data Edit Pragmas	Execute SQL		Edit Database Cell		×
Greate Table Screate Index			Mode: Text ~		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Name	Туре	Schema			-
✓ III Tables (8)			NULL		
> 🔟 LoggingTag		CREATE TABLE LoggingTag (p			
S T S S S S S S S S S S S S S S S S S S		OPENTE TARLE OF LUNC			

A dialog box opens for selecting the database.

- 2. Select the desired tag/alarm log.
- 3. Confirm your selection by clicking the "Open" button.

Figure 3-9

B Choose a database file					×
\leftarrow \rightarrow \checkmark \uparrow \frown \checkmark Daten (D:) \rightarrow Unif	~ Ō	Search HMI_RT_3	_TLG108	٩	
Organize 🔻 New folder			1	= 🔹 🔟	?
Software ^	Name	Date m	nodified	Туре	
OneDrive	HMI_RT_3_TLG108_20210319_132614.db3	3/19/2	921 3:03 PM	DB3 File	
💻 This PC			Í		
🗊 3D Objects					
E Desktop					
Documents					
🔶 Downloads 🗸 🗸	<				>
File name: HMI_RT_3	_TLG108_20210319_132614.db3	\sim	SQLite Datenbar	nkdateien (*.db	\sim
			Open	Cancel	
			()	9)	

A dialog box for assigning names is displayed.

- 4. Assign a name or keep the existing name of the database.
- 5. Click "OK" to confirm your input.
 - Figure 3-10

B Browser for SQLite	?	×
Please specify the database name under which you want to access t	he attached da	tabase
HMT_RT_3_TLG108_20210319_132614	Can	cel

6. The selected database is added to the open database and displayed in the Database Tree view.

Figure 3-11

New Da	tabase 🛛 🔒 Open Databas	e 🚬 🖓 Write	Changes 🔀 Re	vert Changes 🎯 Open Project	😭 Save Project	🗟 Attach Datab	ase			
Database S	tructure Browse Data	Edit Pragmas	Execute SQL		Edit Database Cell		8 ×			
Create	Table 🛛 🗞 Create Index	Print			Mode: Text \checkmark	🚳 🗈 💷	🖹 🔒 »			
Name 🛩 🔲 Tak	oles (8)		Туре	Schema	NULL					
>	LoggingTag SPL_NAMEDPROPERTY			CREATE TABLE LoggingTag (p CREATE TABLE SPL_NAMEDPR						
> 🗐	iseg_segment iseg_segment_purge			CREATE TABLE iseg_segment (CREATE TABLE iseg_segment_I	CREATE TABLE iseg_segment (CREATE TABLE iseg_segment (Type of data currently in cell: NULL					
> 🔳	iseg_storage			CREATE TABLE iseg_storage (p						
	iseg_table			CREATE TABLE iseg_table (pk_ CREATE TABLE iseg_table data	Remote		e ×			
	salite sequence			CREATE TABLE salite sequence	Identity Public	V 188	(L)			
> 📎 Ind	lices (3)			1 - 1	Identity Tublic	- 082P	1			
> 🔳 Vie	ws (2)				Name	Commit	Last modified			
- Triv	naere (0)									
✓ □ HN	/II_RT_3_TLG108_20210319_1	32614								
> 🔳	Tables (8)									
	Indices (0)		5							
	Views (0)									

3.3.4 SQL Queries and Export of a *.csv File

With SQL queries, you can individually link tables and data and then export them.

- 1. Switch to the input area for SQL queries via the "Execute SQL" tab.
- 2. Enter the desired SQL query in the input area. \rightarrow Examples can be found in the Section 3.3.5.
- 3. Execute the SQL query via the "Start" button.
- 4. The result is displayed below the query.
- 5. You can find the status of the SQL query under the results area. In case of faulty SQL queries, the error code is displayed there.

Figure 3-12

New Database	🕞 Open Dat	tabase 🖕	Write Changes Revert Changes	ave Project		Attach Database	
SQL 1 SELECT SELECT LogS LogT	Segment.pk_ IagName.pk_ IagName.Nam	TimeStar Key,					
LogS LogS FROM HMI INNER JO ON LogTa	Segment.Qua Segment.Val [_RT_3_TLG1)IN Logging @Name.pk_K	lity, ue .08_20210 (Tag AS 1 Gey = Log	0319_132614.LoggedProcessValue AS LogSegment LogTagName gSegment.pk_fk_Id				
LogS LogS FROM HMI INNER JO ON LogTa	Segment.Qua Segment.Val [_RT_3_TLG1)IN Logging igName.pk_K eStamp	lity, ue 08_20210 Tag AS 1 Tey = Log pk Key	0319_132614.LoggedProcessValue AS LogSegment LogTagName gSegment.pk_fk_Id	Quality	Value		
LogS LogS FROM HMI INNER JO ON LogTa pk_Time 132606345	Segment.Qua Segment.Val [_RT_3_TLG] JIN Logging igName.pk_K eStamp i756066749	lity, ue 08_20210 Tag AS 1 Key = Log pk_Key 1	0319_132614.LoggedProcessValue AS LogSegment LogTagName gSegment.pk_fk_Id Name HMI RT 3::Ventilator1Data setpointSpeed:V1 setpointSpeed	Quality 24	Value		
LogS LogS FROM HMI INNER JO ON LogTa pk_Time 132606345	Segment.Qua Segment.Val [_RT_3_TLG] JIN Logging AgName.pk_K eStamp i756066749	lity, ue 08_20210 Tag AS 1 Key = Log pk_Key 1	0319_132614.LoggedProcessValue AS LogSegment LogTagName gSegment.pk_fk_Id Name HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed HMI_RT_3::Ventilator1Data_actualSpeed:V1_actualSpeed	Quality 24	Value 0.0		
LogS LogS FROM HMI INNER JO ON LogTa pk_Time 132606345 132606345	Segment.Qua Segment.Val [_RT_3_TLG] JIN Logging AgName.pk_K eStamp 5756066749 1756066749	lity, ue 08_20210 Tag AS 1 Tey = Log pk_Key 1 2	0319_132614.LoggedProcessValue AS LogSegment LogTagName gSegment.pk_fk_Id Name HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed HMI_RT_3::Ventilator1Data_actualSpeed:V1_actualSpeed	Quality 24 24	Value 0.0 0.0		
LogS LogS PRCM HUI INNER JO ON LogTa pk_Time 132606345 132606345	Segment.Qua Segment.Val [_RT_3_TLG] JIN Logging AgName.pk_K eStamp 5756066749 5756066749 5756066749	lity, ue 08_20210 Tag AS 1 (ey = Log pk_Key 1 2 1	0319_132614.LoggedProcessValue AS LogSegment LogTagName gSegment.pk_fk_Id Name HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed HMI_RT_3::Ventilator1Data_actualSpeed:V1_actualSpeed HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed	Quality 24 24 192	Value 0.0 580.0	-4	
LogS LogS PRCM HUT INNER JO ON LogTa 132606345 132606345 132606345	Segment.Qua Segment.Val t_RT_3_TLG1 JNL Logging AgName.pk_K eStamp ;756066749 ;759630954 ;759630954	lity, ue 08_20210 Tag AS J Sey = Log pk_Key 1 2 1 2	0319_132614.LoggedProcessValue AS LogSegment LogTagName gSegment.pk_fk_Id Name HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed HMI_RT_3::Ventilator1Data_actualSpeed:V1_actualSpeed HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed	Quality 24 24 192 192	Value 0.0 580.0 0.0	-4	
LogS LogS PRCM HUT INNER JO ON LogTa 132606345 132606345 132606345 132606345	Segment.Qua Segment.Val t_RT_3_TLG1 JN Logging AgName.pk_K S756066749 S756066749 S759630954 S759630954 S759630954	lity, ue 08_2021(Tag AS 1 fey = Log pk_Key 1 2 1 2 2 2	0319_132614.LoggedProcessValue AS LogSegment LogTagName gSegment.pk_fk_Id Name HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed HMI_RT_3::Ventilator1Data_actualSpeed:V1_actualSpeed HMI_RT_3::Ventilator1Data_setpointSpeed:V1_setpointSpeed HMI_RT_3::Ventilator1Data_actualSpeed:V1_actualSpeed HMI_RT_3::Ventilator1Data_actualSpeed:V1_actualSpeed	Quality 24 24 192 192 192	Value 0.0 580.0 0.0 10.0	-4	

- 6. Open the memory settings via the corresponding button in the menu bar.
- 7. Click "Export to CSV" to save the result as a *.csv file.

Figure 3-13

B Browser for SQLite - D:\UnifiedArchive\HMI_RT_3_TagLoggingDatabase.db3	_	\times
File Edit View Tools Help		
Revert Changes 😵 Open Project 😭 Save Project	abase	>>
Database Structure Browse Data Edit Pragma		
SQL 1 SQL 1		
1 SELECT Save as view		^
2 LogSegment.pk_TimeStamp,		

3 Useful Information

8. Specify the settings for the export and confirm the entry using the "Save" button. Figure 3-14

Column names in first lin	ne 🗸		
Field separator	;	\sim	
Quote character	•		
New line characters	Windows: CR +LF (\r\n)		

3.3.5 Examples of SQL Queries

3.3.5.1 SQL Query for Joining Tables "LoggedProcessValue" and "LoggingTag"

With this SQL query, you can connect the specified data from the table "LoggedProcessValue" of a log segment (database for tag log) with the data from the table "LoggingTag" (main database tag logging) .

Data from table "LoggedProcessValue":

- LogSegment.pk_TimeStamp
- LogSegment.Quality
- LogSegment.Value

Data from table "LoggingTag":

- LogTagName.pk_Key
- LogTagName.Name

SQL query

SELECT

LogSegment.pk_TimeStamp, LogTagName.pk_Key, LogTagName.Name, LogSegment.Quality, LogSegment.Value FROM <Name of log segment>.LoggedProcessValue AS LogSegment INNER JOIN LoggingTag AS LogTagName ON LogTagName.pk_Key = LogSegment.pk_fk_Id

Result in DB Browser

The query is exemplified by the following log segment:

• Log segment: HMI_RT_1_TLG194_20200707_133158

Figure 3-15

Та	Table: LoggingTag AS LogTagName								HMI_RT_	1_TLG1	.94_202	00707	_133	L58 A	.s 1	LogSe	gmen	t
ł	ok_Key	TagSystemId	fk_LogIo	1	Na	ime	Dat f		pk_TimeSt	amp 🖬	pk_fk_Id	Quality	Value					
F	iltern	Filtern	Filtern	Filtern			Filte F		Filtern		Filtern	Filtern	Filtern					
1	1	-		HMI_RT_1::	HMI_Variable	_1:LoggingTag_Cyclic	•	1	1 238603013	35000000	1	192	34.0					
2	2	1	. 19	8 HMI_RT_1::	HMI_Variable	_1:LoggingTag_OnCha	0	2	1323000301-	+0000000	1	192	34.0					
								3	13238603014	45000000	1	192	34.0					
								4	13238603015	50000000	1	192	12.0					
								-	10000600010		1	100	12.0					
		R	esult	of the ab	ove SQ	L query		+				-						
				pk_fk_Id	pk_Key		Name			pk_T	imeStamp) Qu	ality	Value	^			
		1		1	1	HMI_RT_1::HMI_V	ariable_	1:Loggin	gTag_Cyclic	1323860	30135000	000	192	34.0				
		2		1	1	HMI_RT_1::HMI_V	ariable_	1:Loggin	gTag_Cyclic	1323860	30140000	000	192	34.0				
		3		1	1	HMI_RT_1::HMI_V	ariable_	1:Loggin	gTag_Cyclic	1323860	30145000	000	192	34.0				
		4		1	1	HMI_RT_1::HMI_V	ariable_	1:Loggin	gTag_Cyclic	1323860	30150000	000	192	12.0				
		-		4	4	LINAT DT A CLIMAT MA	- del e	tel e e ele	The Ordin	100000	20155000	000	100	12.0				

3.3.5.2 SQL Query to Display Readable Timestamp and Quality Code

With this SQL query, you can connect the specified data from the table "LoggedProcessValue" of a log segment (tag log database) with the data from the table "LoggingTag" (main tag log database).

The query also contains a conversion of the timestamp into local time (PC system) and the quality code into hex format.

Data from table "LoggedProcessValue":

- LogSegment.pk_TimeStamp
- LogSegment.Quality
- LogSegment.Value

Data from table "LoggingTag":

- LogTagName.pk_Key
- LogTagName.Name

SQL query

SELECT

```
LogTagName.Name,

strftime('%Y-%m-%d %H:%M:%f',(("pk_TimeStamp"/86400/1.0E+7)-

134774)*86400), 'unixepoch') AS UTC_TimeStamp,

strftime('%Y-%m-%d %H:%M:%f',(("pk_TimeStamp"/86400/1.0E+7)-

134774)*86400), 'unixepoch', 'localtime') AS Local_TimeStamp,

printf('0x%X', LogSegment.Quality ) AS QualityCode,

LogSegment.value,
```

FROM <Name of log segment>.LoggedProcessValue AS LogSegment
INNER JOIN LoggingTag AS LogTagName
ON LogTagName.pk Key = LogSegment.pk fk Id

Result in DB Browser

The query is exemplified by the following log segment:

• Log segment: HMI_RT_1_TLG194_20200707_133158

Figure 3-16

Т	Table: LoggingTag AS LogTagName						HMI_RT_	1_TLG1	94_202	200707	_133	158 A	S I	LogSegment	
	pk_Key	TagSystemId	fk_LogId	Name	Dat f		pk_TimeSt	amp 🕫	pk_fk_Id	Quality	Value				
ļ	Filtern	Filtern	Filtern	Filtern	Filte F		Filtern		Filtern	Filtern	Filtern				
1	1	1	194	HMI_RT_1::HMI_Variable_1:LoggingTag_Cyclic	0	1	13238603013	35000000	1	192	34.0				
2	2	1	198	HMI_RT_1::HMI_Variable_1:LoggingTag_OnCha	0	2	13238603014	10000000	1	192	34.0				
						3	13238603014	45000000	1	192	34.0				
						4	13238603015	50000000	1	192	12.0				
						-	1000000010	55000000		102	12.0				
						-									
		Re	esult o	f the above SQL query											
				Name		UTC_Tim	neStamp	Local	_TimeStan	np (Quality	Value	^		
		1	н	MI_RT_1::HMI_Variable_1:LoggingTag_Cy	clic 202	20-07-07 1	3:43:33.499	2020-07-	07 15:43:3	3 3.499 0:	xC0	34.0			
		2	н	MI_RT_1::HMI_Variable_1:LoggingTag_Cy	clic 202	20-07-07 1	3:43:33.992	2020-07-	07 15:43:3	3 3.992 0:	xC0	34.0			
		3	н	MI_RT_1::HMI_Variable_1:LoggingTag_Cy	clic 202	20-07-07 1	3:43:34.493	2020-07-	07 15:43:3	3 4.493 0:	xC0	34.0			
		4	н	MI_RT_1::HMI_Variable_1:LoggingTag_Cy	clic 202	20-07-07 1	3:43:34.994	2020-07-	07 15:43:3	3 4.994 0:	xC0	12.0			
		E	u	MT PT 1 UMT Variable 1.1 econortae Ov	die 202	0-07-07 1	2.42.25 405	2020-07-	07 15 42 - 2	5 405 0	~~~	12.0			

3.4 Access via the "Microsoft SQL Server Management Studio"

3.4.1 Overview

With the program "Microsoft SQL Server Management Studio (SSMS)", it is possible to view and evaluate existing logs of the database type "Microsoft SQL Server" independently of the WinCC Unified Runtime.

Figure 3-17

SQLQuery3.sql - VMSITRAIN/WINCCUNIFIED.HMI_RT_3-6_TLG108_20201008_132641 (VMSITRAIN/SITRAIN (62)) - Microsoft SQL Server Management St Quick Launch (Ctrl+Q) File Edit View Query Project Tools Window Help 					
Object Explorer - # × Connect - # **# = # <	Bet Particular Solution Cuery3sql - VRAIN/SITRAIN (62)) Solution , [Quality] Solution , [Value] Solution Get Connect to Server 3 Server type: Database Engine Server name: MIST FRAIN/WINCOUNTERD Authentication: Windows Authentication User name: VMSIT FRAIN/SITRAIN Password: 5				
 Databases Server name 	 2 Login dialog 3 Server type 5 Authentication parameters 				

3.4.2 Download

The "Microsoft SQL Server Management Studio" program is not supplied with WinCC Unified Engineering/Runtime or the SCADA option "Database Option".

You can download the current version free of charge from the Microsoft website: <u>https://docs.microsoft.com/en-us/SQL/ssms/download-SQL-server-management-studio-ssms?view=SQL-server-ver15</u>

3.4.3 Log Access

After start of the "Microsoft SQL Server Management Studio" program, the following parameters must be entered:

- Server type

 → Select "Database Engine" as the server type in order to view the log databases of WinCC Unified.
- Server name
 → The server name is:

 <lp>

 <
- Authentication parameters
 - Type

 \rightarrow Select Windows Authentication in order to connect to the database with the current Windows user.

- Username
 → The username is: <computer name><current user>
- Password

After successful login, the databases can be opened and viewed from the navigation bar on the left.

4 Appendix

4.1 Service and support

Industry Online Support

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks:

support.industry.siemens.com

Technical Support

The Technical Support of Siemens Industry provides you fast and competent support regarding all technical queries with numerous tailor-made offers

- ranging from basic support to individual support contracts.

Please send queries to Technical Support via Web form:

support.industry.siemens.com/cs/my/src

SITRAIN – Digital Industry Academy

We support you with our globally available training courses for industry with practical experience, innovative learning methods and a concept that's tailored to the customer's specific needs.

For more information on our offered trainings and courses, as well as their locations and dates, refer to our web page:

siemens.com/sitrain

- Note You can learn about the products used in this application example in the courses:
 - SITRAIN system course: WinCC Unified & Unified Comfort Panels (Entry ID: <u>109773211</u>)
 - SITRAIN advanced course: SIMATIC WinCC Unified for PC systems (Entry ID: <u>109781323</u>)
 - SITRAIN entry course: SIMATIC WinCC (TIA Portal) machine-oriented for Comfort Panels and WinCC Runtime Advanced (Entry ID: <u>109758624</u>)
 - SITRAIN advanced course: SIMATIC WinCC (TIA Portal) machine-oriented for Comfort Panels and WinCC Runtime Advanced (Entry ID: <u>109758626</u>)
 - SITRAIN course: SIMATIC WinCC Professional, SCADA in the TIA Portal (Entry ID: <u>109758618</u>)
 - SITRAIN course: SIMATIC Visualization Architect, automatic HMI generation (entry ID: 109758628)
 - SITRAIN entry course: WinCC V7 (Article ID: <u>109758633</u>)
 - SITRAIN advanced course: WinCC V7 and WinCC Options (Article ID: <u>109758660</u>)

4 Appendix

Service offer

Our range of services includes the following:

- Plant data services
- Spare parts services
- Repair services
- On-site and maintenance services
- Retrofitting and modernization services
- Service programs and contracts

You can find detailed information on our range of services in the service catalog web page: <u>support.industry.siemens.com/cs/sc</u>

Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for iOS and Android: support.industry.siemens.com/cs/ww/en/sc/2067

4.2 Industry Mall

Abbildung 4-1



The Siemens Industry Mall is the platform on which the entire siemens Industry product portfolio is accessible. From the selection of products to the order and the delivery tracking, the Industry Mall enables the complete purchasing processing – directly and independently of time and location:

mall.industry.siemens.com

4.3 Links and literature

Table 4-1

No.	Subject	
\1\	Siemens Industry Online Support	
	https://support.industry.siemens.com	
\2\	Link to the entry page of the application example	
	https://support.industry.siemens.com/cs/ww/en/view/109782659	
\3\	Manual "SIMATIC HMI WinCC Unified WinCC Engineering V17 - WinCC Unified"	
\ 4\	Topic page "WinCC Unified and Unified Comfort Danale"	
\4\	https://support.industry.siemens.com/cs/ww/en/view/109777887	
\5\	Manual SIMATIC HMI WinCC Unified Getting Started	
	https://support.industry.siemens.com/cs/ww/en/view/109783212	
\6\	Download "DB Browser for SQLite"	
	https://SQLitebrowser.org/	
\7\	Download "Microsoft SQL Server Management Studio"	
	https://docs.microsoft.com/en-us/SQL/ssms/download-SQL-server-management-studio-	
	ssms?view=SQL-server-ver15	
\8\	Link to website "SQLite"	
1.01	www.SQLite.org	
\9\	Link to website "Microsoft SQL Server"	
	www.microsoft.com/en-us/SQL-server	
\10\	Application Example "SIMATIC WinCC Unified - Tips and Tricks for Scripting (JavaScript)".	
	https://support.industry.siemens.com/cs/ww/en/view/109758536	
\11\	Demo project for SIMATIC WinCC Unified and SIMATIC HMI Unified Comfort Panels https://support.industry.siemens.com/cs/ww/en/view/109776633	
\12\	Guide for switching from Comfort Panels to Unified Comfort Panels https://support.industry.siemens.com/cs/ww/en/view/109768002	
\13\	Filtering alarms and alarms in SIMATIC WinCC Unified	
	https://support.industry.siemens.com/cs/ww/en/view/109760056	
\14\	SIMATIC WinCC Unified - Tips and tricks for scripting	
\15\	SITAIN System Course: WinCC Unified & Unified Comfort Depole	
(15)	https://support industry siemens com/cs/ww/en/view/109773211	
\16\	SITE AIN advanced course: SIMATIC WinCC Initiad for PC systems	
(10)	https://support.industry.siemens.com/cs/ww/en/view/109781323	
\17\	SITRAIN entry course: SIMATIC WinCC (TIA Portal) machine-oriented for Comfort Panels and	
(17)	WinCC Runtime Advanced	
	https://support.industry.siemens.com/cs/ww/en/view/109758624	
\18\	SITRAIN advanced course: SIMATIC WinCC (TIA Portal) machine-oriented for Comfort Panels	
	https://support.industry.siemens.com/cs/ww/en/view/109758626	
\19\	SITRAIN course: SIMATIC WinCC Professional. SCADA in the TIA Portal	
,,	https://support.industry.siemens.com/cs/ww/en/view/109758618	
\20\	SITRAIN course: SIMATIC Visualization Architect, automatic HMI generation	
	https://support.industry.siemens.com/cs/ww/en/view/109758628	
\21\	SITRAIN entry course: WinCC V7	
	https://support.industry.siemens.com/cs/ww/en/view/109758633	
\22\	SITRAIN advanced course: WinCC V7 and WinCC options	
	https://support.industry.siemens.com/cs/ww/en/view/109758660	

4.4 Change documentation

Table 4-2

Version	Date	Change
V1.0	06/2021	First version
V1.0	12/2021	Chapter 2.1.3.3: from V16 upd. 2 additional step 4 necessary