

Niagara 4 Driver for Siemens S7 User Guide

Copyright © 2020 SAFECONTROL s.r.o.

All rights reserved.

Copyright Notice

The software described herein is furnished under a license agreement and may be used only following the terms of the agreement.

This document may not, in whole or in part, be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machinereadable form without prior written consent from SAFECONTROL s.r.o.

The confidential information in this document is provided solely for use by SAFECONTROL employees, licensees, and system owners; and is not to be released to or reproduced for anyone else; neither is it to be used for reproduction of this Software or any of its components.

All rights to revise designs described herein are reserved. While every effort has been made to assure the accuracy of this document, SAFECONTROL shall not be held responsible for damages, including consequential damages, arising from the application of the information contained herein. Information and specifications published here are current as of the date of this publication and are subject to change without notice.

The release and technology contained herein may be protected by one or more patents, foreign patents, or pending applications.

www.safecontrol.cz info@safecontrol.cz

Vanickova 315/7 169 00 Prague 6



Table of contents

Change log	3
Driver Overview	4
Devices supported by the driver	5
The protocol implementation	6
Prerequisites for Integration	6
Installation	6
Licensing	7
Order codes	7
Basic config guide	7
Setup guide	8
Overview	8
Connecting the S7 PLC	8
Adding an S7 Network to a Station	8
Configuring an S7 Network	11
S7 Device Manager	12
Adding new S7 devices to the Station	13
S7 Device	16
S7 Block Manager	17
Manual adding of DB	19
S7 DBs	21
S7 Points	
Adding a new S7 Point	
FAQ	25



Change log

3.8

• Build for 3.8.111

4.2

- Build for 4.2.36.34
- Early release for testing

4.3

- Build for 4.3.58.4
- N4 Upgrade of S7 Driver 4.3

4.4

- Build for 4.4.73
- Updated job logging
- Added S7 documentation module

4.8

• Build for 4.8.0.110

4.9

• Build for 4.9.0.164

4.10

• Build for 4.10.0.154

4.11

- Build for 4.11.1.16
- Added support for S7-1500 PLC
- Minor bugs fixed



Driver Overview

The S7 driver directly integrates Siemens S7 controllers into the Niagara system.

The S7 series PLCs are widespread devices, and our driver runs on dozens of European installations.

The Tridium Niagara driver allows connecting to Siemens S7 PLC via native S7 protocol over ethernet. The S7 PLC can be upgraded with Niagara graphics or integrated with various BMS protocols supported by Niagara.

The driver supports communication with Siemens PLC's S7-300, S7-400, S7-1200, and S7-1500 series over native S7 Ethernet protocol. The driver reads data from the DB part of memory. Supported data formats are Bit, Word, Short, Double Word, Double Int, Float, Date, String, and Printable String.

Key features:

- Connection to a PLC via Ethernet/IP
- Reading system info (only for S7-300/400 series)
- Reading the date and time from PLC (only for S7-300/400 series)
- Reading PLC status
- Reading block info auto-discover DB (only for S7-300/400 series)
- Reading var cyclical data reading
- Writing var

Supported devices:

- Siemens S7-300 PLC
- Siemens S7-400 PLC
- Siemens S7-1200 PLC
- Siemens S7-1500 PLC



Devices supported by the driver

- Siemens CPU S7-300 PLC (tested with CPU 313SC)
- Siemens CPU S7-400 PLC (not tested, but it is similar to S7-300 PLC)
- Siemens CPU S7-1200 PLC (tested with CPU 1212C)
- Siemens CPU S7-1500 PLC (not tested, but similar to S7-1200 PLC)

			C	PU			CP	DRIVE
	300	400	WinAC	Snap7S	1200	1500	343/443/IE	SINAMICS
DB Read/Write	V	-+00 				√ (3)	x	J
EB Read/Write	v	v	v	✓ ✓	v	✓ (c) ✓	x	✓ ✓
AB Read/Write	√	~	✓	✓	~	~	x	」
MK Read/Write	✓	✓	 ✓ 	 ✓ 	✓	✓	x	x
TM Read/Write	✓	✓	✓	✓	x	x	x	x
CT Read/Write	✓	✓	✓	✓	x	x	x	x
Read SZL	✓	✓	✓	 ✓ 	✓	✓	√	✓
Multi Read/Write	 ✓ 	~	 ✓ 	✓	~	~	v	✓
Directory	✓	✓	 ✓ 	 ✓ 	x	x	√	(2)
Date and Time	✓	~	 ✓ 	 ✓ 	x	x	x	✓
Control Run/Stop	~	~	✓	✓	x	x	(1)	✓
Security	✓	✓	✓	✓	x	x	x	x
Block Upload/Down/Delete	~	~	✓	x	x	x	~	~

(1) After the "Stop" command, the connection is lost, Stop/Run CPU sequence is needed.

(2) Although DB is present and accessible, the directory shows only SDBs.

(3) See S7-1200/1500 notes.



The protocol implementation

- Connection to a PLC
- Reading system info (only for S7-300/400 series)
- Reading the date and time from PLC (only for S7-300/400 series)
- Reading PLC status
- Reading block info auto-discover DB (only for S7-300/400 series)
- Reading var cyclical data reading
- Writing var

Prerequisites for Integration

- 1. Correctly installed modules with the driver. Find more information in the chapter "Installation".
- 2. Active driver's license and certificate on the target platform. Find more information in the chapter "Licensing".
- 3. Correct physical connection between systems. The PLC must be connected to the same LAN as JACE 8000 or PC with Tridium Supervisor 4.
- 4. Knowledge of types of points and their offset in DBs. In the case of S7-1200 PLC and S7-1500 PLC, knowledge of block numbers and their Mcc length.

Installation

Source files are available to download from the SAFECONTROL license web (<u>https://license.safecontrol.cz</u>). First, extract the **s7.zip** archive and copy all included *.jar files to your Niagara modules directory, typically:

C:\Niagara\Niagara-4.4.xx.xx\modules.

For correct behaviour, it is necessary to install *.jar files on both the client platform (Workbench PC) and the target platform (JACE8000 or Supervisor).

Note: Close the Niagara Workbench after inserting all the modules in the folder. Next time you start the Niagara Workbench, the driver will be loaded and immediately ready for use.



Licensing

There are various types of licences based on the number of used points. Only a demo license is time-limited.

You can ask for a license on the SAFECONTROL license web (<u>https://license.safecontrol.cz</u>) or by sending an e-mail to <u>sales@safecontrol.cz</u>. The purchased license and Safecontrol certificate file will be generated and prepared for download on the Niagara Central license web. You can also download the license online in Niagara Workbench in the License manager view, as shown in the picture below:

Miagara Workbench		- 🗆 X
File Edit Search Bookmarks	Tools Window Help	J
	○ ▷ ■ • ■ □ □ ₽ ₩ • ○ □ ₩ * * /	
62.168.57.227 (Inels) : Platform		🖌 Ucense Manager 🚽
Nav Second Sec	License Manager Host Address 62.186.57.227 Host ID Qnn:TTAIN-BJ4E-4819-D01A-28E7 Brand ID TridlumENEA Licenses Safecontrol.License (safecontrol 4.6 - never expires) TridlumENEA.License (Tridlum 4.6 - never expires)	Certificates SafecontroLcertificate (safecontrol - never expires) Tridium.certificate (Tridium - never expires)
 C2.168.57.227 (Inels) Treatment Treatment Station (Inels) 	Import License Import ane or more licenses from files import License from the local license database import License from the local license database import License from the local license database OK Cancel	× enses from the licensing server
Palette Palette Automatical A		
Bollers Chillers Chillers Colls CoolingTowers Dampers Ductwork		
C Electrical G Faire	Import Export View Delete	Import View Delete

Figure 1: License import in the License manager

Order codes

- DR-SC-S7-250 Driver for integration Siemens S7 PLC 250 data points
- DR-SC-S7-UNL Driver for integration Siemens S7 PLC unlimited data points

Basic config guide

- 1. Connect the PLC to the same LAN as JACE 8000 or PC with Tridium Supervisor 4.
- 2. Add a new S7 Network to your Drivers node.
- 3. Add the chosen S7 Device to your S7 Network.
- 4. Correctly configure the newly added S7 Device.
- 5. Add blocks under DBs extension of S7 Device.
- 6. Add points under added blocks.

For more in-depth help, read the following chapters.



Setup guide

Overview

An S7 Network represents the network interface on Tridium Supervisor 4 or Tridium JACE 8000 used for communication with the S7 PLCs over S7 native protocol.

Connecting the S7 PLC

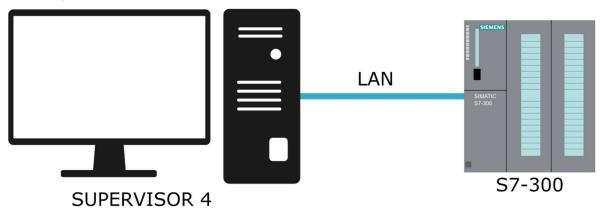


Figure 2: Diagram of connection to Supervisor 4

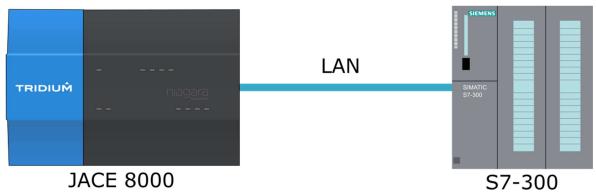


Figure 3: Diagram of connection to JACE 8000

Adding an S7 Network to a Station

To add an S7 Network, perform the following steps:

- 1. Connect chosen S7 to the same LAN as JACE 8000 or PC with Tridium Supervisor 4.
- 2. Open the station and expand the navigation tree.
- 3. Double-click on the Drivers node.
- 4. Use the "New" button in the Driver Manager window. Next, select S7 Network from the drop-down list and confirm it by clicking OK.
- 5. Enter a name for the network and click OK.



File	E	Edit	S	ear	ch	В	ooki	mar	ks	Т	ool	5	Wir	ido	w	Ν	lana	ger	H	lelp															(2	Quick S	earch				
	$\left \cdot \right $	8			*	C	1	ħ	4	С	R	5	i	1	1	Ŧ	E	[B	R	1	Ç	Ж	¢	Ľ	1	Đà	>	ĸ	4	C		Ð	1	0	č.	0,					
My Host :	DESK		OSQI	знg				Stati					onfig			Dri	vers																						/	Dri	/er Ma	inager
• Na	v														ſ	Dri	iver	Ма	nag	ger	1																				1 ob	jects
щ	0	0	Stati TCP, Rem	ion (/IP C	Copi onfi	gura	tion						-			Nar		araN	etwo		Type		etwor			En	abled e	F	Fault	Caus	e											₽.
÷	2		ion (Alar Con	m fig	rices															to Ado		1	7 Netw [1 - 10	0]				×														
	• • •	- O U	Files Hier	App arch	Nia s	gara	Netv	vork														C	К	Can																		
C:\Use		00.00		20120	ıra4	.4\	tri	diu	m>					~													New			Edit		E.	Tagi	t								

Figure 4: Adding a new network

Host : DESI	KTOP-O5QBHGS(S7) : Station (S7) : C	onfig	: Drivers				/	Driver Mana
Nav			Driver Manager					2 object
°O	🔀 My Network	-	Name	Туре	Status	Enabled	Fault Cause	
	CP/IP Configuration		🕜 NiagaraNetwork	Niagara Network	{ok}	true		
•	Remote File System		🕑 S7Network	S7 Network	{ok}	true		
- # -	🜲 Alarm							
•	History					New	🖉 Edit 🖏 Taglt	

Figure 5: Successfully added S7 Network

Status {ok} indicates that the Niagara 4 platform has installed all required modules, licenses and certificates. Otherwise, see page 6 - chapter Installation, or page 7 - chapter Licensing.



Double-clicking the S7 network in Driver Manager will show S7 Device Manager with a blank table of devices.

•	<u>.</u>		- 0	п	O	ð I	_		1 10	1 6	B	*	0	Ĺ	Q5 :	× *	1 1	0	۳.	Ð	100		a	٢
lost : D	ESKT	OP-05QBHGS		Statio	n (S7)	: Confi	g :	Drivers		S7Netw	/ork											1	S7 Device	e Manag
Nav	(1	Datal	base	Î													0) objects
•	С	Х 🕄 М	y Network					Name	Туре	Exts	Status	Healt	h S7 <i>i</i>	Address	5									r.
			onfiguratio	n																				
		C Remote F																						
		Station																						
w	#	Station (S7)																						
		Alarm																						
	w	O Config																						
		Servi	ces																					
		- 🕤 Drive	rs																					
		► 0	NiagaraNe	twork																				
		• 0	S7Network	¢																				
		Apps																						
	Þ	Files																						
		Hierarchy																						
	₽.	History									-	_		and in			-			-		222	-	
							*	O	lew Fo	lder		ew	,∳ [™] Ec	lit	🎽 Dis	cover		Cancel	(+) <i>I</i>	\dd	>> 1	latch	🖏 Tag	ut ,

Figure 6: Empty S7 Network



Configuring an S7 Network

The S7 network property sheet contains conjoined settings for all descendants (S7 devices). The ping monitor and global poll scheduler settings are shared and applicable for all devices under the S7 network.

Ser BESITION C	ISQBHGS (S7) : Station (S7) : Config	Drivers S7Network	💉 AX Property She
Nav		Property Sheet S7Network (S7 Network)	
 ▶ ⊕ ♦ Static ▼ ₩ Static 	CP/IP Configuration Remote File System on on (S7) Narm	Image: Status {ok} Image: Status {ok}	
Þ	Config Services Drivers MiagaraNetwork S7Network	Ping Enabled true Ping Frequency +00000h 05m 00s d Alarm On Failure true Startup Alarm Delay +00000h 05m 00s d	
))	Apps Apies Ailes Aierarchy Aistory	▶ X Tuning Policies Tuning Policy Map ▼ Poll Scheduler S7 Poll Scheduler ■ Poll Enabled True ■ Fast Rate 00000h 00m 01.0000s d [1ms-+inf] ○ Refresh ■ Save	

Figure 7: Property Sheet of the S7 Network - global communication parameters



S7 Device Manager

S7 Device Manager is the primary overview of the S7 Network components. You can open it by double-clicking on the S7 network in the navigation tree. The Manager shows a list of all devices in the S7 network.

	ю. Ш		LOI LOI	E.W.	L# 0'0	- U L	_ 40	<u> </u>	1.1.	1004	τ _# (±		88 (C.)	(+)
OP-O5QBHGS(S7) : Station (S7)	: Config	Driver	s : S7	Network								/	S7 Device N	lanag
		Data	base										0 0	bject
🐹 🚯 My Network	*	Name	Type	Exts St	atus Heal	th S7 Ade	dress							R
	-													
-														
History			New Fold	ler	New	/ Edit	de p	iscover	III Ca	ncel	() Add	>> Match	C, Tagit	
	OP-O5QBHGS (S7) : Station (S7)	 CPP-OSQBHGS (S7) : Station (S7) : Config My Network TCP//P Configuration Remote File System Station Remote File System Station Alarm Config Services Orivers NiagaraNetwork STNetwork STNetwork Apps Files Hierarchy. 	DP-OSQBHOS(S7) : Station (S7) : Config : Driver Data Name TCP/IP Configuration Remote File System Station (S7) A Alarm Config Config Services: Config Services: Config Services: Config Files: History History	DP-OSQBHCS(S7) : Station (S7) : Config : Drivers : S7 Database Name Type TCP/IP Configuration Remote File System Station (S7) A Alarm Config	DP-OSQBHGS(S7) : Station (S7) : Config : Drivers : S7Network	OP-OSQBHGS (S7) : Station (S7) : Config : Drivers : S7Network	OP-OSQBHGS(S7) : Station (S7) : Config : Drivers : S7Network	DP-O5QBHGS(S7) : Station (S7) : Config : Drivers : S7Network	DP-OSQBHGS(S7) : Station (S7) : Config : Drivers : S7Network	DP-OSQBHCS(S7) : Station (S7) : Config : Drivers : S7Network	DP-O5QBHGS(S7) : Station (S7) : Config : Drivers : S7Network.	DP-O5QBHGS(S7) : Station (S7) : Config : Drivers : S7Network	DP-O5QBHGS(S7) : Station (S7) : Config : Drivers : S7Network. My Network Oatabase Name Type Exts Status Health S7 Address Name Type E	OP-O5QBHGS(S7) : Station(S7) : Config : Drivers : S7Network Image: Config Ima

Figure 8: S7 Device Manager

S7 Device Manager provides a set of control buttons at the bottom of the window:

- New Folder This will create a new folder meant for the custom organisation of devices.
- New You can create a new S7 device with this button. Carefully fill in the pop-up window for a successful
 connection to PLC.
- Edit You can edit the name and connection parameters of the selected device. Double-click on the device works as an Edit button.
- **Discover** This button is disabled in the current release.
- Add/Cancel These buttons are disabled in the current release.
- Match This button is disabled in the current release.



Adding new S7 devices to the Station

To insert a new device in the S7 network, perform the following steps:

- 1. Open the S7 device manager.
- 2. Click the "New" button.
- 3. Select the PLC type (S7-300 PLC, S7-400 PLC, S7-1200 PLC or S7-1500 PLC) from the drop-down list and click OK. In the case of S7 PLC type 1200 or 1500, the device has to be in 300/400 compatibility mode.
- 4. Set the parameters of the device in the following window. The most important setting is the IP address of the device. The device can only be added with the correct IP address!

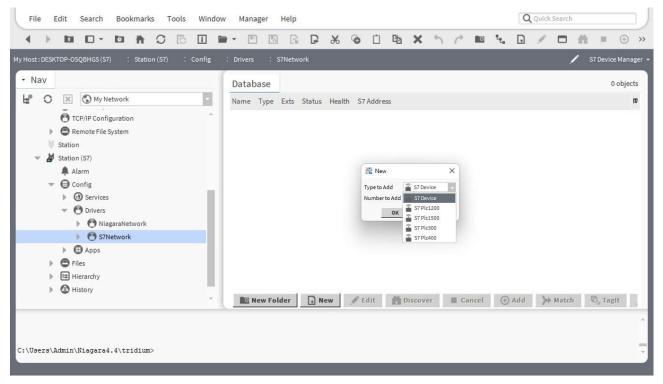


Figure 9: Adding a S7 device to the S7 Network

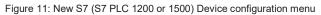


Host:DESKTOP-O5QBHGS(S7) : Station(S7)	: Config : Drivers : S7Network 💉 S7 Dev	/ice Manage
Nav	Detabase	0 objects
🕈 🔘 🐹 🔇 My Network	A New X	Ę
 TCP/IP Configuration Remote File System Station Station (S7) Alarm Config Config Goservices Orivers MagaraNetwork 	Name Type Enabled lp Address Port Rack Slot IP S7Plc300 S7Plc300 true 192.168.1.15 0 2 Name S7Plc300 Type S7 Plc300 1 Type S7 Plc300 Im Im Enabled true Im Im Im Ip Address 192.168.1.15 Im Im Port unspecified 102 [rl-65536] Rack 0 Im Im Im	
 S7Network Apps Files Hierarchy Mistory 	OK Cancel	agit

Figure 10: New S7 Device configuration menu

For the S7 PLC 1200 or 1500, it is necessary to change the Slot value to "1". The most important setting is the IP address of the device. The device can only be added with the correct IP address!

Host : DESKTOP-O5QBHGS (S7)	: Station (S7) : Cor	nfig : Drivers	: S7Networ	n .:									37 DEV	ice Manag
Nav		New New						×						0 object
🐒 🔿 🐹 🕥 My Netwo	k	The New						^						F
TCP/IP Configurate Remote File Syste	10 ma	Name T		ed Ip Addres 192.168.1		ck Slot 2	E	•						
Station (S7)		Name	S7P1c1200 S7 P1c1200											
 Config Services Orivers Niagaral 	Construction of the Constr	Enabled Ip Address Port Rack	 true 192.168.1.1 unspecified 0 		[-1 - 6	5536]	A-B							
👻 😷 S7Netwo	rk	📔 Slot	1											
 Happs Files Hierarchy History 				ОК Са	ncel									
			lew Folder	New	/ Edit	th Discov	er	Cance	1	Add	≫	Match	🖏 Та	igit
\Users\Admin\Niagara4.4\	ridium>													





Sometimes, it is necessary to initiate communication by pinging the device after adding it. Right-click on the device in the device manager, choose Actions and use the Ping command. The health parameter should read {ok}.

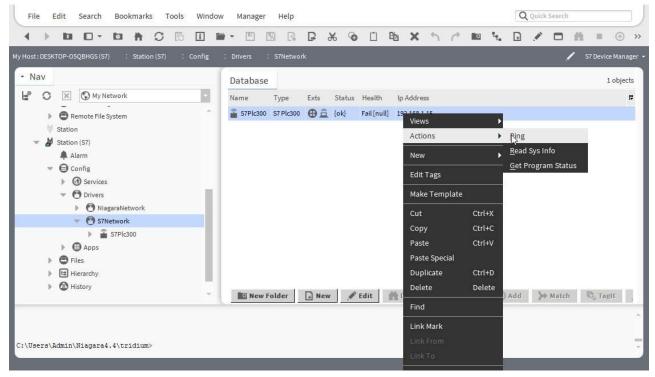
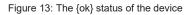


Figure 12: Ping Action on S7 Device

4 >		N O I		••	19 R	D X	6 0	Û	Do 🗙	1	(* 1 0	۴. 🖬			10	\oplus
Host : DES	SKTOP-O5QBHGS(S7) : S	tation (S7)	: Config	: Drivers	: S7Netwo	ork								1	S7 Device	Manage
• Nav				Database											1	objects
e o	My Network		-	Name	Туре	Exts	Status	Health	Ip Addres	s						Ę
	Remote File System		~	S7Plc300	22				ct-: 192.168.1.							
1	Station															
- 4	Station (S7)															
	🌲 Alarm															
	🕶 🖨 Config															
	Services															
	👻 🕙 Drivers															
	NiagaraNetw	ork														
	👻 🕐 S7Network															
	S7Plc300															
	Apps															
1	Files															
1	Hierarchy															
1	History			-		-			B.B. Lucy	and in a		0	No.		104	-
				New	older	New	, M	Edit	th Discove	r I	Cancel	() Add	29 M	latch	🖏 Tag	it ,
	\Admin\Niagara4.4\trid															





S7 Device

S7 Device in the Workbench represents the physical PLC. Double-click the device in the device tree to open the S7 device property sheet. You can set selected parameters here (the most important is Poll frequency) and read information about the PLC and its communication.

From the context menu are accessible Actions for Pinging the device, Reading system info and Getting program status. System time and complete system information are not accessible for all types of S7 PLC.

Host : DESKTOP-O5QBHGS (S7) : Station (S7) : Config	: Drivers : S7Network : S7P	16300	🖍 AX Property Shee
Nav	Property Sheet \$7Plc300 (\$7 Plc300)		
My Network	Status	{ok}	
Remote File System Station	Enabled Fault Cause	C true	
 	 Health Alarm Source Info 	Ok [05-Oct-18 9:46 AM CEST] Alarm Source Info	
Config Services	S7 Address S7 Time	192.168.1.15:102 Fri Oct 05 08:55:36 CEST 2018	
 O Drivers O NiagaraNetwork 	Tcp Config Poll Frequency	S7 Tcp Comm Config	
S7Network S7Pic300	Connection Type	Op +	
Apps Griles	Connection Pdu Length	480	
Hierarchy Mistory	D Bs Plc Status	S7 Block Device Ext S7 Cpu Status Unknown	
· •		Save 🖾 Save	

Figure 14: Device property sheet



S7 Block Manager

Data Block is a part of PLC memory in which program variables are stored. There are multiple DB types, but SAFECONTROL S7 Driver can read out and write in only in a **Global Data Block**. Each DB has its address (Number), length (Mcc length is the number of accessible bytes in the DB) and further parameters.

S7 Block Manager is accessible by double-clicking on the "DBs" property under the S7 Device in the navigation tree. There are two different managers, one for S7-300 PLC, S7-400 PLC and one for S7-1200 PLC, S7-1500 PLC.

The S7-300 PLC and S7-400 PLC support automatic DB discovery. For auto-discovery, follow the instructions below:

- 1. Open S7 Block Manager.
- 2. Click the "Discover" button.
- 3. Check the result in the top window of S7 Block Manager.

Nav		S7 Learn Blocks	Success 📎 🗙
	🔀 🚯 My Network	Discovered	6 objects
F 0		Number MccLength Author	
	 Services Drivers NiagaraNetwork S7Network S7Network S7Network Alarm Source Info Of Tcp Config D Bis 	▲ 103 38 PEA	
		201 70	
		202 70	
		203 22	
		Database	0 objec
		Name Type Block Number Mcc Length Author	
		in the second seco	
) 	Gystem Info Gystem In	🕞 New 💉 Edit 🍎 Discover 🔳 Cancel. 🛞 Add 🗞 Tagit	

Figure 15: Block manager with the successful discovery

- 4. Choose the required DB and drag it to the bottom window.
- 5. Confirm your choice by clicking OK.



st : DESKTOP-05QBHGS (S7) : Station (S7) : Config	: Drivers	: S7Netwo	ork : S7F	10300 .	D Bs				🖍 S7 Block Manag
Nav	S7 🔊	'Learn Blocks						S	Success ≫ 🙁
🗘 🔀 My Network	Discove	ered							6 objects
Config	Number	Mcc Length	Author						₽
Gervices Gervices Drivers	201	70							^
O NiagaraNetwork	202	70							
 S7Network 	203	22							
Alarm Source Info	Databa	se							0 object
GP Tcp Config D Bs	Name T	ype Block N	Number Mo	c Length	Author				ß
B G System Info G System Info G Files Hierarchy G History	FH 103	38	PEA						
v.		_	New New	🖋 Edit	Discove	r 🕅 Car	cel 💮 Add	🖏 Tagit	

Figure 16: Successfully added DB



Manual adding of DB

This function is available for offline configuration of S7-1500 PLC, S7-1200 PLC, S7-300 PLC, and S7-400 PLC.

For the manual DB addition, perform the following steps:

- 1. Open S7 Block Manager.
- 2. Click the "New" button.
- 3. In the first window, fill in the number of DBs you want to add.
- 4. In the second window, fill in the correct block number and Mcc length.

ost : DESKTOP-05QBHGS (S7) : Station (S7) : Config	: Drivers : S7Network : S7Plc300 : DBs 🖊	S7 Block Man
Nav		\gg ×
P 🔘 🐹 🚯 My Network	Discovered	0 objeci
Remote File System Station Station (S7) Alarm	Number MccLength Author	
← Gonfig ← Onfig ← Onfig	Type to Add S7 Block Database Numberto Add Name Type	0 obje
DBs DS System Info	New ✓ Edit. Image: Discover Image: Cancel ⊙ Add © Tagit	

Figure 17: New DB dialogue menu



ost:DESKTOP-O5QBHGS(S7) : Station(S7) :	Config : Drivers	: S7Network	: S7Plc300	: DBs			/	S7 Block Manag
	-						, i	» ×
Nav								
My Network	1 New					<		0 objects
Remote File System					3	_		E.
Station	Name Type	Block Number	Mcc Length	Author	(\$			
👻 🎽 Station (S7)	S7Block S7 Block	k 0	0	no data received				
Alarm	Name	S7Block						
♥ ⊖ Config	Туре	S7 Block						
G Services O Drivers	Block Number	0						0 objec
O Divers Onivers Onivers Onivers	Mcc Length	0						
▼ ⑦ S7Network	Author	no data recei	lved		AB			
- 🚡 S7Plc300								
Alarm Source Info		ОК	Cance	t				
Fight Tcp Config				_				
▶ ⊕ DBs								
System Info	.*.:	- I	Vew 🖉 i	dit Disco	ver 🔳 C	ancel	🕀 Add 🛛 🖏 Tagit	

Figure 18: New DB configuration



S7 DBs

All data in a DB are read in one poll cycle. You can see the raw data and set the Poll rate settings under the attribute Data. Each DB has its Poll rate settings – you can select a slow rate for DB with lower priority and a fast rate for most important data or data which require a short response time. The Poll rate details are defined in the S7 network property sheet.

lost:DESKTOP-05QBHGS(S7) : Station(S7) : Config	: Drivers : S7Network	: S7Plc300	DBs : S7Block_103	🖍 AX Property Sheet		
Nav	Property Sheet					
🕈 🔘 🐹 🔇 My Network	EB S7Block_103 (S7 Block)					
	Block Number	103				
Remote File System	Flag	0				
9 Station	🗎 Language	0				
👻 🎽 Station (S7)	Block Flags	1				
Alarm	Block Language	5				
	Load Size	158				
Gervices	Sbb Length	48				
O Drivers	Mcc Length	38				
NiagaraNetwork	Author	PEA				
	🔻 🎬 Data	S7 Block Ext				
	Poll Frequence	y Normal 🗸				
Alarm Source Info	Data 🖓	00 00 aa a	a aa aa aa aa aa aa 18 10 05 0			
Fight Config						
DBs						
System Info			C Refresh Save			
			V Refresh			

Figure 19: DB property sheet



S7 Points

S7 Control points must be manually added from S7 Point Manager under the DB.

Adding a new S7 Point

- 1. Open S7 Point Manager by double-clicking the selected DB.
- 2. Click the "New" button.
- 3. Choose the required data type and the number of points in the first appearing window.
- 4. Set starting offset for the point in the selected DB. Offset is counted in bytes.
- 5. For the bit point/writable, it is necessary to set the required bit offset (the position in the byte) in the attribute proxy Ext.

Host : DE	ESKTOP-O5QBHGS (S7) : Statio	on (S7) : Config	g : Drivers : S7Network : S7Plc300 : DBs : S7Block_103	🖍 S7 Point Manager
• Nav			Database	0 objects
F. (ource Info Ifig Slock_103	Name Offset Type Out Tuning Policy Name Name Offset Type Out Tuning Policy Name New X Type to Add \$77 Bit Point Number to Add 1 OK Cancel	e
	Gilder Gilder		- New & Edit & Tagit	

Figure 20: Adding a new S7 point



/y Host : DES	KTOP-O5QBHGS (S7)	: Station (S7) : Config	Drivers S7Network S7Plc300 DBs S7Block_103	S7 Point Manager
		👫 New		× 0 objects
₽ 0	My Netw Orivers Onivers Onigare	Name Offset T ③ S7BitPoint 0 S7	pe Enabled Facets Tuning Policy Name Point Type Conversion Bit Point true trueText=true,falseText=false defaultPolicy Bit Type Default	9 1
		 Name Offset Type Enabled Facets Tuning Policy Name Point Type Conversion 	S7BitPoint 0 S7 Bit Point True True True True Default Policy BitType Default	
	Files		OK Cancel	

Figure 21: Set start offset in the DB

Nav	Property Sheet		24. U. 141
My Network My Network MiagaraNetwork S7Network S7Network S7Network S7Network S7Network Des D Bs S7Network S7Net	 S7BitPoint (S7 Bit Point) Facets trueText=true, false Proxy Ext S7 Bit Proxy Ext Status Fault Cause Enabled Device Facets Conversion 	eText=false » ③ • ok} true • Pefault • Pefault Policy	
Gata G	The second	rue {ok}	
Bystem Info Define Apps Generative Generative Generative Generative Generative Generative Generative	Point Type B	0 C Refresh Save	

Figure 22: Set bit offset in the byte



Siemens data representation in Niagara:

S7 Data Type	Niagara Control Point	
Bit	Boolean Point / Boolean Writable	
Short		
Word	Numeric Point / Numeric Writable	
Double Word		
Float		
Date		
String	String Point / String Writable	
Printable String		



FAQ

Q: The driver doesn't establish communication with S7-1200 PLC.

A: Check the IP address and set the slot number to "1".

Q: How to set bit offset for the bit point / writable?

A: Open the proxy Ext under the bit point property sheet and set the required offset in the attribute Bit offset.

Q: Can I add the DB manually without connected PLC?

A: All the points can be added manually before on-site installation.

Q: The data in DB are empty, or the point under DB is in a fault state.

A: Check the Block Number and Mcc length in the program in S7 PLC. Check the attribute Point Type under point Proxy Ext.