Siemens Simatic for Niagara N4 & AX

User Guide

Contents

1 Introduction

The driver is designed to enable direct communication between Siemens[1] Simatic S7 controllers and Tridium Niagara powered devices.

It provides an efficient solution for industrial systems monitoring, facilitates seamless integration of multiple protocols and allows convenient makeover of front-end software.

The driver implements Ethernet S7comm (S7 Communication) - Siemens proprietary protocol that runs between programmable logic controllers (PLCs). It is used for PLC programming, exchanging data between PLCs, accessing PLC data from SCADA (supervisory control and data acquisition) systems and diagnostic purposes.

2 Supported CPU models and Features

Functions	CPUs						
	300	400	WinAC	1200	1500	LOGO	S7200
DB Read/Write	X	X	X	X(1)	X(1)	X(2)	X(2)
EB Read/Write	X	X	X	X	X	X(2)	X(2)
AB Read/Write	X	X	X	X	X	X(2)	X(2)
MK Read/Write	X	X	X	X	X	X(2)	X(2)
TM Read/Write	X	X	X	-	-	-	-
CT Read/Write	X	X	X	-	-	-	-
Get/Set PLC Date and Time(3)	X	X	X	-	-	-	-
Get PLC statuses	X	X	X	-	-	-	-
Read SZL(3)	X	X	X	-	-	-	-
Get AG Block Info(3)	X	X	X	-	-	-	-
DB Get(3)	X	X	X	-	-	-	-
Conrol Run/Stop	X	X	X	-	-	-	-
Security Function(3)	X	X	X	-	-	-	-

(1) Optimized block access must be disabled

(2) The entire memory is mapped in the (V) Area accessible as DB 1 from the outside

(3) Function is in beta testing stage

3 Requirements

- Niagara AX 3.8[2] / N4 4.0 or later powered device such as Jace 2 / 3 / 6 / 8000, Supervisor or their OEM versions
- Simatic driver license
- PLC configuration via **TIA Portal**. You will need to have access to Siemens TIA portal.

[1] All trademarks or registered trademarks are property of their respective owners
[2] If support for older Niagara versions is required, please contact the vendor

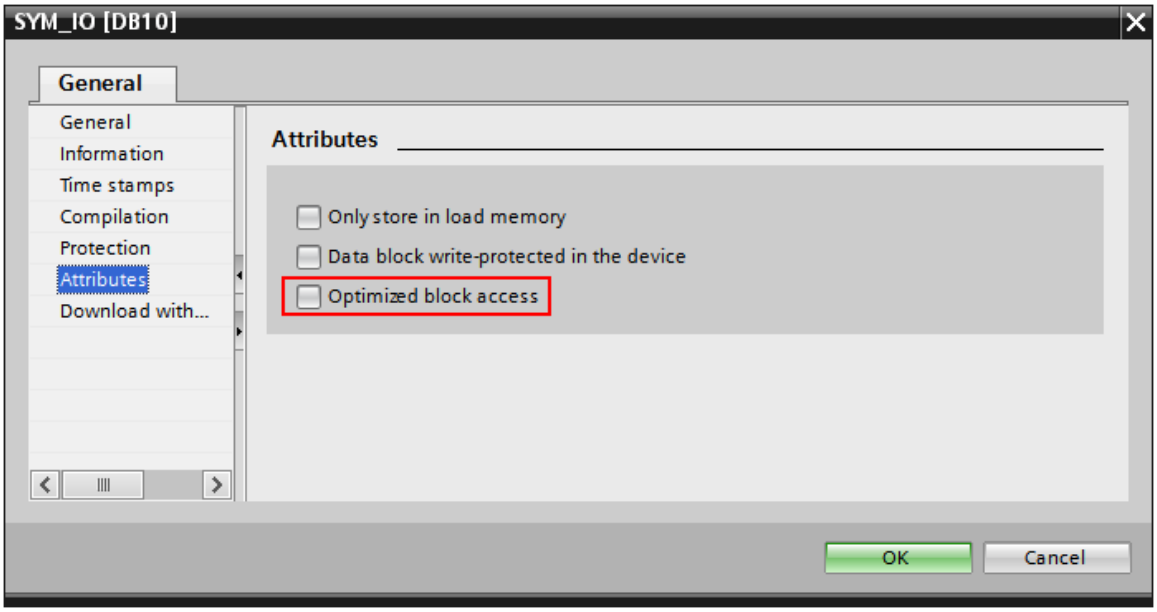
4 S7 1200 / 1500

To access a DB some additional setting PLC-side are needed.

1. Only global DBs can be accessed.
2. The optimized block access must be turned off (see section below).
3. The access level must be “full” and the “connection mechanism” must allow GET/PUT (see section below).

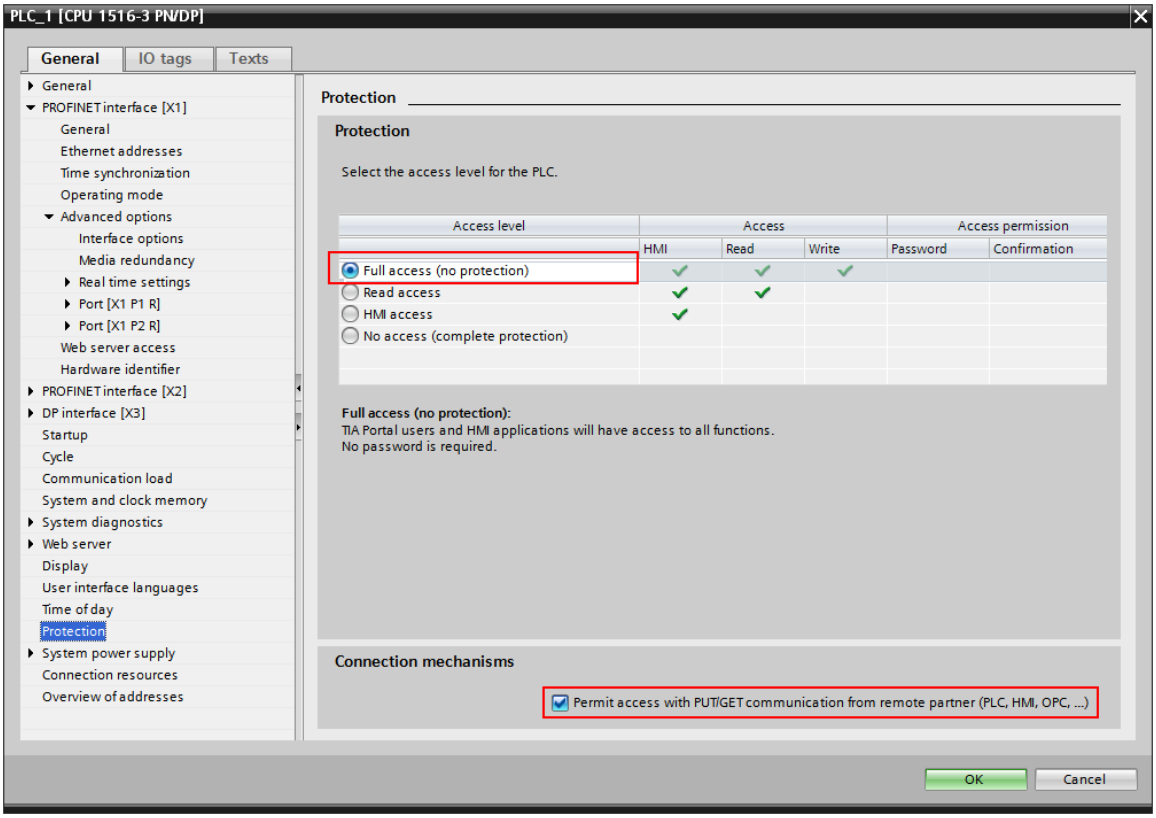
5 DB property

Select the DB in the left pane under “Program blocks” and press Alt-Enter (or in the contextual menu select “Properties...”) Uncheck Optimized block access, by default it’s checked.



6 Protection

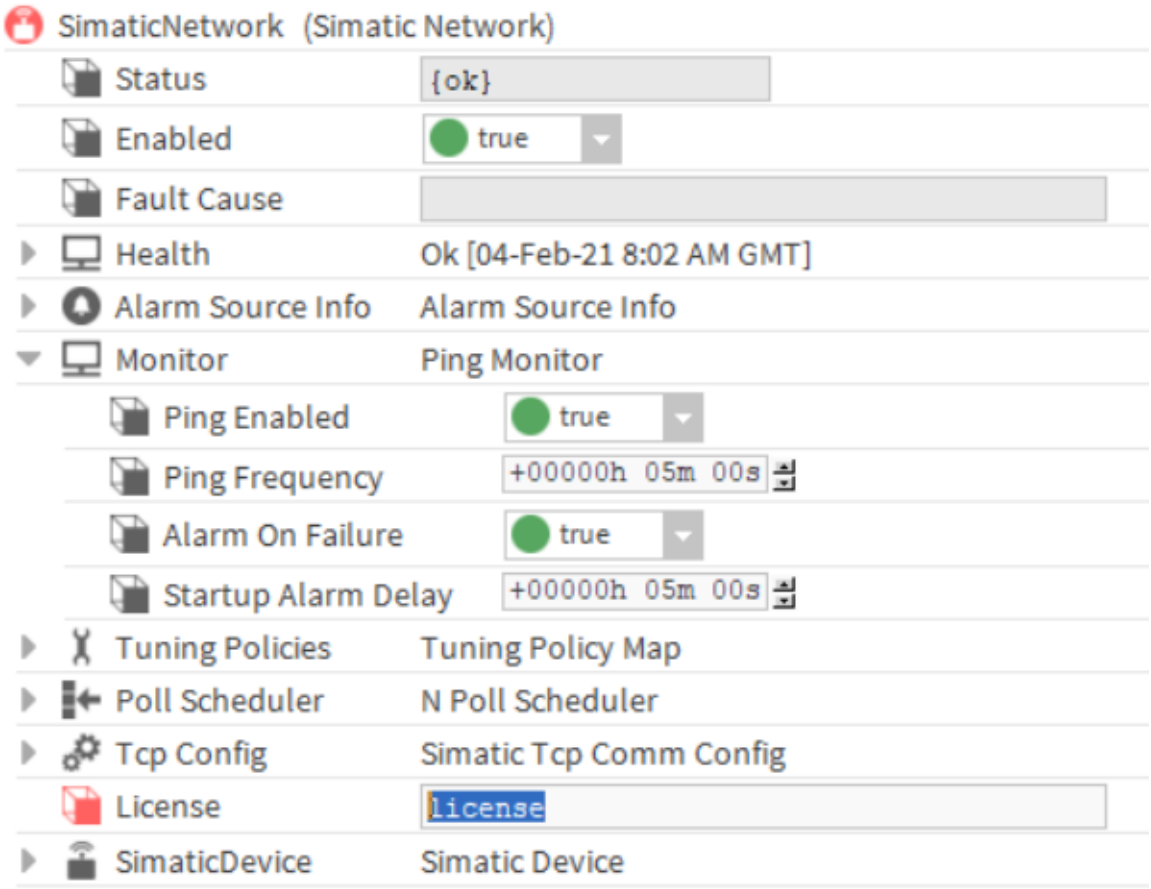
Select the CPU project in the left pane and press Alt-Enter (or in the contextual menu select "Properties..."). In the item Protection, select "Full access" and Check "Permit access with PUT/GET ...." as in figure.



7 Network

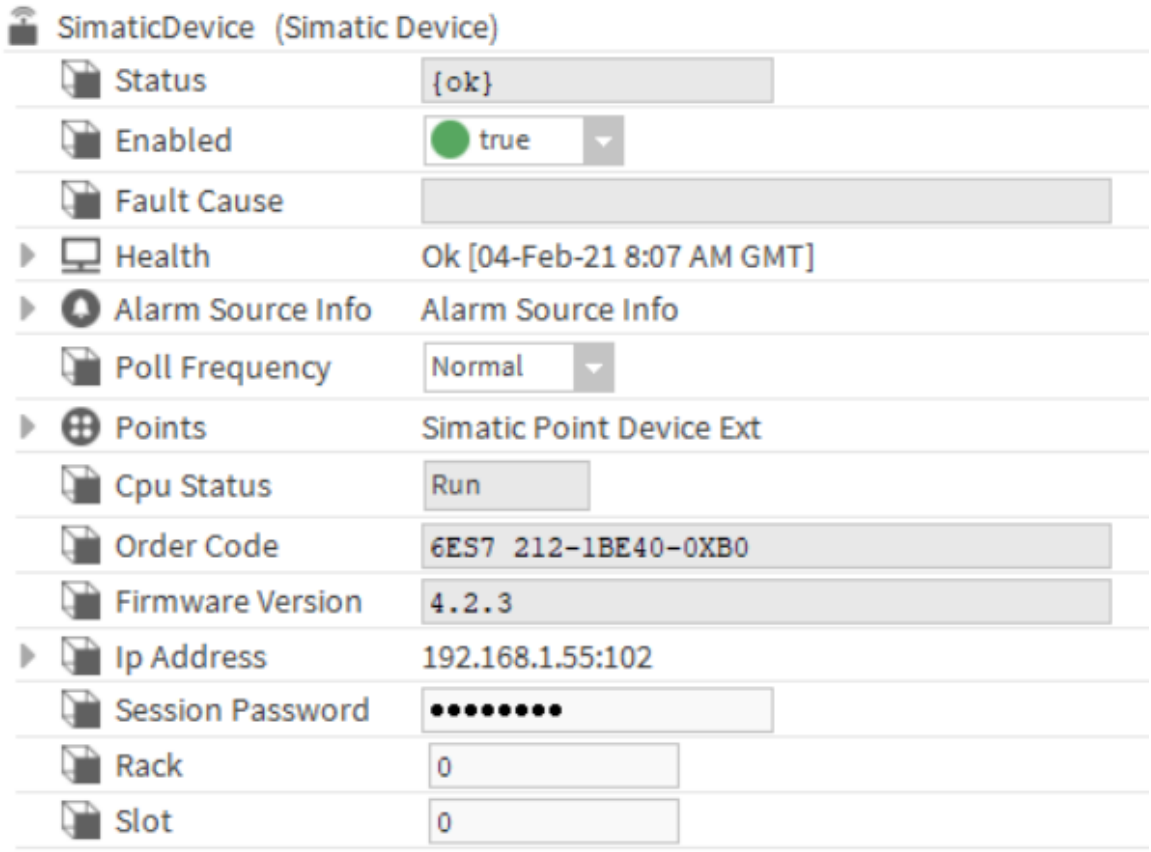
To start communication between Tridium Niagara and Siemens Simatic PLC, make sure Tridium Niagara and PLC are in the same Ethernet network.

1. Install **simatic.jar** or **simatic-rt.jar** and all dependent modules via Software Manager
2. Start the station and add a new **Simatic Network**
3. In the network **Properties** enter the license number and press **Save**


SimaticNetwork (Simatic Network)
Status
{ok}
Enabled
true
Fault Cause
Health
Ok [04-Feb-21 8:02 AM GMT]
Alarm Source Info
Alarm Source Info
Monitor
Ping Monitor
Ping Enabled
true
Ping Frequency
+00000h 05m 00s
Alarm On Failure
true
Startup Alarm Delay
+00000h 05m 00s
Tuning Policies
Tuning Policy Map
Poll Scheduler
N Poll Scheduler
Tcp Config
Simatic Tcp Comm Config
License
license
SimaticDevice
Simatic Device

8 Devices

Open the **Device Manager** and press **New** to add the **Simatic Device**. Enter relevant Rack and Slot information, please use Rack = 0 and Slot = 0 for 1200/1500 PLCs. Under the device enter relevant IP address, port (default port 102) and session password if used. If the device is shown offline please right click on the device and ping it.



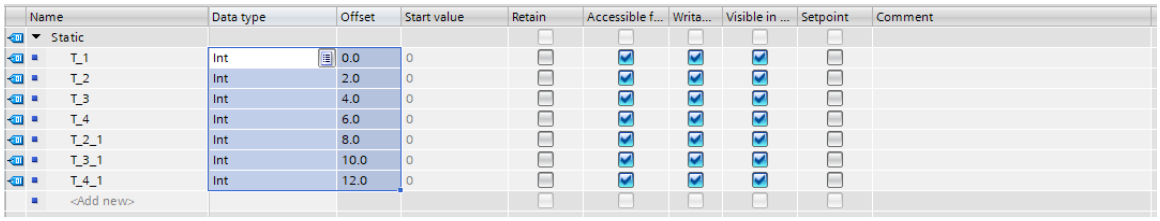
9 Point Discovery

Please note that automatic point discovery is not supported by the S7 protocol. Point import will be added in the next release of the driver, currently points have to be added manually.

10 Points

Every Simaic point extension contains the following properties:

- Area type – area of the PLC memory, where
  - PE - Process Inputs
  - PA - Process Outputs
  - MK - Merkers
  - DB - Data Blocks (DB)
  - CT - Timers
- DB Id – Data Block address. Example: in order to read `DB45` DB Id will be 45. Property is only applicable for DB area type, property value will be ignored for all other area types (e.g. PE, PA, MK, CT).
- Offset – point address in data block. For DB memory area offset is shown in the TIA portal (see screenshot below). For other area type offset will be shown as part of the point tag, e.g. for point tag %IW112 offset will be 112.
- Data Type – point data type has to be set the same as in TIA portal (see screenshot below).
- Bit Address - bit address is only relevant to the PE and PA area type and will be shown as part of the point tag, e.g. for point tag %I1.6 bit address will be 6.
- Signed - signed or unsigned analogue value data type.



	Name	Data type	Offset	Start value	Retain	Accessible f...	Writa...	Visible in ...	Setpoint	Comment
	Static									
	T_1	Int	0.0	0						
	T_2	Int	2.0	0						
	T_3	Int	4.0	0						
	T_4	Int	6.0	0						
	T_2_1	Int	8.0	0						
	T_3_1	Int	10.0	0						
	T_4_1	Int	12.0	0						
	<Add new>									