







## SMA Driver Manual

This documents usage of the SMA driver on the Niagara AX platform

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## Quick Start

- Install the driver module in Workbench. Restart Workbench and then install the module on your station.
- Open the csi3sma palette and paste a SmaAscendNetwork object under the Drivers node in your station.
  - Set the number of threads in the thread pool to at least one more than the number of serial and IP connections you will have.
  - Configure the license object and reboot. This could be the very last thing you do – it is safe to build an unlicensed database.
- Double click the SmaAscendNetwork to enter the network manager view and press the new button to add serial and IP connections. The connection objects can also be copy and pasted from the palette.
- When a connection is established, the driver will auto discover all inverters on the field bus.
- Double-click the points property of each inverter to enter the point manger view. Press the discover button to find points on the inverter.

## Compatibility

### Niagara AX

This software will function on all Niagara AX 3.*n.nnn* platforms.

### SMA

This software integrates SMA field bus networks that utilize the Sunny Net telegram. If the SMA Net is specified, this driver is incompatible.

### Multiple Master Nodes

The SMA protocol allows for multiple master nodes on a network but this driver cannot support these configurations. Due the timing limitations of Niagara AX and Java, this driver cannot resolve conflicts.

## Physical Connection

The driver communicates with the RS-485 communications terminal on a SMA inverter.

## Module Installation

Install `csi3sma.jar` on the computer where Niagara AX Workbench will be run. To install the jar, place a copy of the file in the modules directory of your Niagara AX installation. This is typically `C:\Niagara\Niagara-3.n.nnn\modules`.

Install the `csi3sma` module on the target station. Using a Niagara AX Workbench where the module has already been installed, connect to the station's Platform. Go to the Software Manager and install `csi3sma`.

## Licensing

Every serial or IP connection must be licensed. Unlicensed connections will operate in demo mode for 2 hours. After demo mode expires, the station must be restarted to reestablish a connection, but it is otherwise safe to build a database.

Licensing is managed on an object in your database. The licensing object is located on the property sheet of the GcmAscendNetwork. It has the following properties.

- Connections – The number of serial or IP connections.
- Product Code – Text automatically generated by the driver that is needed to generate a license key.
- License Key – Where the key to validate the license must be entered.

Determine the number of connections needed. It is safe to build an unlicensed database so that you may determine your requirements through actual use. Enter the number of connections in the appropriate property of the license object.

Copy the value of the “Product Code” property that is automatically generated after entering the number of connections. You can highlight the value and copy it by pressing CTRL-C. Send the product code to your CSI<sup>3</sup> representative. They will respond with a text string for you to enter in the “License Key” property.

You must restart the station after changing the “License Key”.

**The exact text and case of the product code and license key are critical. Do not send screen shots. Highlight the text, copy it using CTRL-C and paste into an email.**

## Network Installation

Using the SMA palette in workbench, copy and paste the SmaAscendNetwork under the Drivers node in the station database (/config/drivers).

## Adding Connections

Double click the SmaAscendNetwork to enter the network manager view. Press the new button at the bottom of the view and select which type of connection you would like to install. Communications settings can be configured in the next window that appears.

## Adding Inverters

Inverters are automatically discovered when the connection attaches to the fieldbus.



## Component Guide

### *SmaAscendNetwork*

There can be only one SmaAscendNetwork in your station and it must be located under the standard “Drivers” node (/Config/Drivers). It has no physical correspondence with the underlying system.

The following properties are unique or have special importance:

- **Thread Pool** – This controls the number of threads used to execute all actions of all objects in the network. There should be one thread per connected device and at least one additional thread for other tasks.
- **License** – Discussed in another section.

### *SmaDeviceFolder*

This is for organizing connection objects.

### *SmalpConnection*

This represents a device that the driver communicates via a serial connection tunneled over IP.

The following properties are unique or have special importance:

- **Timeout** – How long the device pause at any given time and after which the driver gives up waiting for a response.
- **Ip Host** – IP address or host name.
- **Ip Port** – IP port number.
- **Devices** – See GcmSubnetDeviceExt.

### *SmaSerialConnection*

This represents a device that the driver communicates via a serial connection tunneled over IP.

The following properties are unique or have special importance:

- **Timeout** – How long the device pause at any given time and after which the driver gives up waiting for a response.

- **Serial Config** – The default settings other than the port name do not need to be changed (1200,8,1,N).
- **Devices** – See GcmSubnetDeviceExt.

## **SmaInverter**

This device object represent an inverter. It is auto discovered by the driver.

The following properties are unique or have special importance:

- **Serial Number** – SMA serial number
- **Device Type** – Device description
- **Net Addr** – SMA network address
- **Points** – Click this object to discover and work with points on the inverter
- **Alarm Enabled** – Disabled by default. This is linkable, so you can link a weather provider to only enable alarming when the sun is up (it's the sun down property, you'll need to negate it).
- **Alarm Inhibit** – If alarm enabled is true, how long to go without a ping before going into alarm. This is reset every time the alarm enable property changes.

## **SmaProxyExt**

This is a point extension in the NiagaraAX architecture. Points with this extension represent points on the remote device.

The following properties are unique or have special importance:

- **Index** – SMA identifier.
- **Channel Type** – 1=analog, 2=digital, 4=counter, 8=status
- **Data Type** – SMA data type
- **Gain** – SMA conversion
- **Offset** – SMA conversion

## Driver History

April 26, 2011: Module version 3.5.34

- If stale time is set, point will now go stale. Helpful for when driver powers down.
- Ability to alarm devices.

March 19, 2010: Module version 3.5.11

- Changed the license file name from .license to .csi3.

March 3, 2009: Module version 3.3.27

- First Release