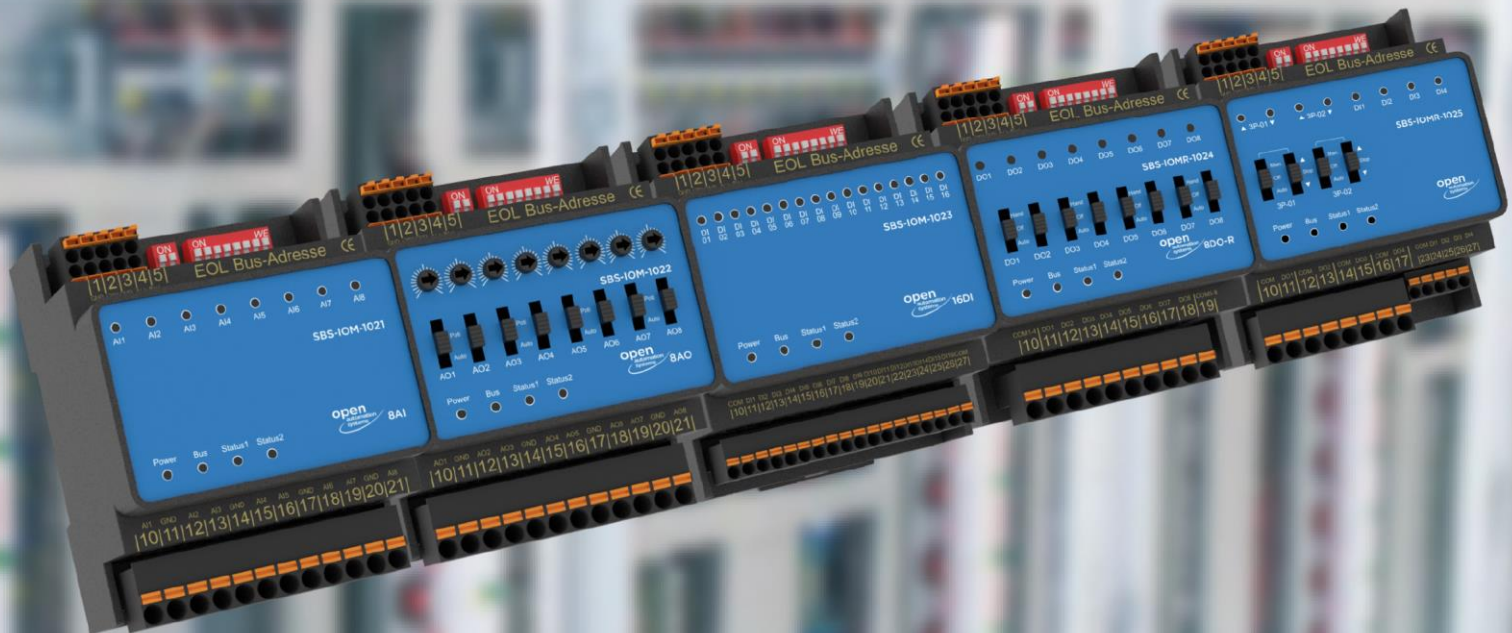




OAS I/O WEB Module-Configurator

Application Manual

OASModbusUtilities

The OAS I/O WEB Module-Configurator is based on the software module ***OASModbusUtilities***.

This is based on Tridium's ModBus-Driver and enables easy commissioning and operation of the OAS Modbus modules (SBS IOM I/O-Fieldbus Modules). The OASModbusUtilities can be accessed via Niagara Workbench or via web browser.

Software Version 2.1.1

→ www.openautomationsystems.store

IoT Solutions and Services
for Smart Automation



Read the complete description before using the tool.

Table of Contents

1	Safety instructions	7
1.1	Symbol and information explanation	7
1.2	Assumptions	7
2	Glossary	7
3	Introduction	8
3.1	Licensing	8
4	Network	9
4.1	Set up an Async Network	9
4.2	Set up a TCP Network	13
5	User Management	16
5.1	Web-User	16
5.1.1	Configuration of Web-User Access	16
6	Network Overview	19
6.1	Page Header	21
7	Physical OAS Modbus-Modules	23
7.1	General information	23
7.1.1	Autobauding	23
7.1.2	Baud rate	23
7.1.3	Module Type	23
7.1.4	Firmware version	23
7.1.5	Timeout Seconds	24
7.1.6	Status LED	24
7.1.7	Module Cmd	25
7.1.8	Module Status	25
7.2	Actions	26
7.2.1	Write Configuration	26
7.2.2	Check	26
7.3	OAS-SBS-IOM-1021	27
7.3.1	Module Config View	29
7.3.2	Module Status View	30

7.3.3	Niagara Workbench Interface.....	31
7.4	OAS-SBS-IOMR-1022	35
7.4.1	Module Config View	36
7.4.2	Module Status View	37
7.4.3	Niagara Workbench Interface.....	38
7.5	OAS-SBS-IOM-1023.....	41
7.5.1	Module Config View	42
7.5.2	Module Status View	43
7.5.3	Niagara Workbench Interface.....	44
7.6	OAS-SBS-IOMR-1024	47
7.6.1	Module Config View	48
7.6.2	Module Status View	49
7.6.3	Workbench Interface	50
7.7	OAS-SBS-IOMR-1025	53
7.7.1	Module Config View	54
7.7.2	Module Status View	56
7.7.3	Niagara Workbench Interface.....	57
7.8	OAS-SBS-IOMR-1026	60
7.8.1	Module Config View	61
7.8.2	Module Status View	62
7.8.3	Niagara Workbench Interface.....	63
7.9	OAS-SBS-IOMR-1031	66
7.9.1	Module Config View	67
7.9.2	Module Status View	68
7.9.3	Niagara Workbench Interface.....	69
8	Device Configuration Table for the OAS Modbus-Modules	73
9	Order Information	74

List of figures

Figure 1: Adding a ModbusAsyncNetwork to Drivers	9
Figure 2: Network Com-Port configuration.....	10
Figure 3: Adding Niagara OAS-SBS- devices to the network.....	11
Figure 4: Device Address configuration	12
Figure 5: Adding a ModbusTCPNetwork to Drivers	13
Figure 6: Adding Niagara OAS-SBS- devices to the network.....	14
Figure 7: Device address and IP address configuration.....	15
Figure 8: Web-User's Nav-File creation	16
Figure 9: Web-User's category creation	17
Figure 10: Web-User's Role creation.....	17
Figure 11: Web-User's Account creation	18
Figure 12: Network Overview for a TCP network.....	19
Figure 13: Network Overview for an Async network	19
Figure 14: Mismatching module type error.....	20
Figure 15: Down/Unreachable module error	20
Figure 16: Disabled module error	20
Figure 17: Default OAS Page Header.....	21
Figure 18: Widget Tree view of Page Header	21
Figure 19: Properties view of picture	22
Figure 20: Toolbar of Px Editor.....	22
Figure 21: Module Actions.....	26
Figure 22: OAS-SBS-IOM-1021 physical module	27
Figure 23: OAS-SBS-IOM-1021 Config View.....	29
Figure 24: OAS-SBS-IOM-1021 Set-Characteristics Dialog.....	29
Figure 25: OAS-SBS-IOM-1021 Module Satus View	30
Figure 26: OAS-SBS-IOM-1021 AX Property Sheet View.....	31
Figure 27: OAS-SBS-IOM-1021 Ai Point	32
Figure 28: OAS-SBS-IOM-1021 Attaching alarm to Ai point	33
Figure 29: OAS-SBS-IOM-1021 Setting Time Delay and Time Delay to Normal.....	33
Figure 30: OAS-SBS-IOM-1021 Short Circuit and Sensor Error Handling	34
Figure 31: OAS-SBS-IOMR-1022 physical module.....	35
Figure 32: OAS-SBS-IOMR-1022 Config View	36
Figure 33: OAS-SBS-IOMR-1022 Status View	37

Figure 34: OAS-SBS-IOMR-1022 AxProperty Sheet View.....	38
Figure 35: OAS-SBS-IOMR-1022 Ao Point.....	40
Figure 36: OAS-SBS-IOM-1023 physical module	41
Figure 37: OAS-SBS-IOM-1023 Module Config View	42
Figure 38: OAS-SBS-IOM-1023 Module Status View	43
Figure 39: OAS-SBS-IOM-1023 AxProperty Sheet View	44
Figure 40: OAS-SBS-IOM-1023 Di Point	45
Figure 41: OAS-SBS-IOM-1023 Setting up a counter	46
Figure 42: OAS-SBS-IOM-1023 Counterpoint	46
Figure 43: OAS-SBS-IOMR-1024 physical module.....	47
Figure 44: OAS-SBS-IOMR-1024 Module Config View.....	48
Figure 45: OAS-SBS-IOMR-1024 Module Status View.....	49
Figure 46: OAS-SBS-IOMR-1024 AxProperty Sheet View.....	50
Figure 47: OAS-SBS-IOMR-1024 Do Point	52
Figure 48: OAS-SBS-IOMR-1025 physical module.....	53
Figure 49: OAS-SBS-IOMR-1025 Module Config View.....	54
Figure 50: OAS-SBS-IOMR-1025 Module Status View.....	56
Figure 51: OAS-SBS-IOMR-1025 AxProperty Sheet View.....	57
Figure 52: OAS-SBS-IOMR-1025 Ao3p Point.....	58
Figure 53: OAS-SBS-IOMR-1026 physical module.....	60
Figure 54: OAS-SBS-IOMR-1026 Module Config View.....	61
Figure 55: OAS-SBS-IOMR-1026 Module Status View.....	62
Figure 56: OAS-SBS-IOMR-1026 AxProperty Sheet View.....	63
Figure 57: OAS-SBS-IOMR-1026 Do Point	65
Figure 58: OAS-SBS-IOMR-1031 physical Modul.....	66
Figure 59: OAS-SBS-IOMR-1031 Module Config View.....	67
Figure 60: OAS-SBS-IOMR-1031 Module Status View.....	68
Figure 61: OAS-SBS-IOMR-1031 AxProperty Sheet View.....	69
Figure 62: OAS-SBS-IOMR-1031 Do Point	71
Figure 63: OAS-SBS-IOMR-1031 Di Point.....	71
Figure 64: OAS-SBS-IOM-1031 Setting up a counter	72
Figure 65: OAS-SBS-IOM-1031 Counterpoint	72

List of tables

Table 1: Glossary	7
Table 2: Autobauding Modes List	23
Table 3: Timeout Settings List	24
Table 4: Module Command List.....	25
Table 5: Module Status List	25
Table 6: Datapoint consumption	73
Table 7: Device Configuration Table.....	74
Table 8: Order Information	74

1 Safety instructions

1.1 Symbol and information explanation

Warning of a danger point!



This symbol indicates a threat or immediate danger to the function of the system or parts of the system. Failure to heed these warnings could result in property damage and malfunction.

1.2 Assumptions

It is assumed that the person who wants to operate the OASModbusUtilities via the Niagara Workbench has a good basic knowledge of the Niagara Framework and the Modbus protocol as well as the TCP protocol.

It is assumed that the person who wants to operate the OASModbusUtilities via the web interface is familiar with the handling of web browsers.

2 Glossary

Term	Definition
Admin-User	A person who has the permissions to access and operate the OASModbusUtilities via the Niagara Workbench.
Web-User	A person who has the permissions to access and operate the OASModbusUtilities via a Web Browser.
Module	A physical Modbus apparatus of the OAS-SBS-IOM... series
Feedback Value	Display value of the internal feedback of the OAS Modbus-Modul
CoV	Change of Value

Table 1: Glossary

3 Introduction

The software module OASModbusUtilities is a utility for the rational, structured and partly automated setup, configuration, and commissioning of the SBS-IOM I/O fieldbus modules on Niagara 4 platforms.

The utility OASModbusUtilities provides the SBS-IOM module driver as well as a comfortable WEB interface, the OAS I/O WEB Module-Configurator.

The initial installation and setup of OASModbusUtilities as software, is done exclusively on the Niagara 4 - Workbench.

OASModbusUtilities enables the initial creation and setup of the SBS IOM I/O fieldbus modules on the Niagara 4 - Workbench.

If OASModbusUtilities is running on the station, it provides the OAS I/O WEB Module Configurator, which is then accessed with the web browser.

For setup, commissioning, and maintenance of the SBS IOM I/O fieldbus modules and their inputs and outputs, the OASModbusUtilities software provides the WEB interface (OAS I/O WEB Module-Configurator) on the running station.

The OAS I/O WEB Module-Configurator facilitates browser-based setup, configuration, and commissioning of SBS IOM I/O fieldbus modules, in the workshop or on the construction site, with remote or on-site access.

The station is hardware independent and can run on any Niagara 4 platform, such as JACE, HAWK or EagleHawk. This can also be accessed via a web browser in the communication network, e.g. a supervisor.

3.1 Licensing

The OASModbusUtilities license is limited to a total of 16 OAS Modbus-Modules per network. (See also 8 Device Configuration Table for the OAS Modbus-Modules).

4 Network

4.1 Set up an Async Network

To set up a working Async network following steps must be performed.



The following steps can only be performed by an admin-user.

1. Drag the **ModbusAsyncNetwork**-component from the **network** folder of the **OASModbusUtilitiesAsync** palette and drop it onto **Drivers**.

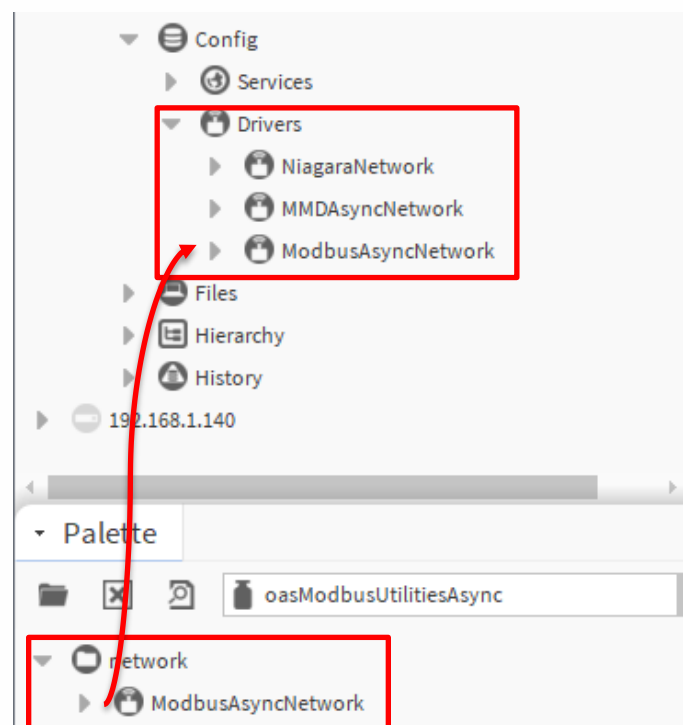


Figure 1: Adding a ModbusAsyncNetwork to Drivers

- The OASModbusAsyncNetwork-Component is pre-configured to enable communication with the OAS-Modbus-Modules. However, a Com-Port must be provided, to which the OAS-Modbus-Modules are connected.

Property Sheet

ModbusAsyncNetwork (Oas Modbus Async Network)

Status	{ok}
Enabled	☒ true
Fault Cause	
Health	Ok [6-11-20 11:32 AM CET]
Alarm Source Info	Alarm Source Info
Monitor	Ping Monitor
Tuning Policies	Tuning Policy Map
Poll Scheduler	Basic Poll Scheduler
Retry Count	10
Response Timeout	+000000h 00m 01.000s
Float Byte Order	Order3210
Long Byte Order	Order3210
Use Preset Multiple Register	☐ false
Use Force Multiple Coil	☐ false
Max Fails Until Device Down	2 [0 - max]
Inter Message Delay	000000h 00m 00.000s [0ms - 1sec]
Serial Port Config	COM1, 38400, 8, 1, None
Status	{ok}
Port Name	COM1
Baud Rate	Baud38400
Data Bits	Data Bits8
Stop Bits	Stop Bit1
Parity	None
Flow Control Mode	☐ RtsCtsOnInput ☐ RtsCtsOnOutput ☐ XonXoffOnInput ☐ XonXoffOnOutput
Modbus Data Mode	Rtu
Sniffer Mode	☐ false
Rtu Sniffer Mode Buffer Size	8 [1 - max]
Overview	Velocity Px View
OASSBSIOM1021	OASSBSIOM1021[4]
OASSBSIOMR1022	OASSBSIOMR1022[2]
OASSBSIOM1023	OASSBSIOM1023[3]
OASSBSIOMR1024	OASSBSIOMR1024[1]

Figure 2: Network Com-Port configuration

3. Drag an **OASSBSIOYXXXX**-component from the **devices** folder of the **OASModbusUtilitiesAsync** palette and drop it onto **OASModbusUtilitiesAsync**. The selected **OASSBSIOYXXXX**-component should correspond to a physical module that is connected to your controller, e.g. a JACE.

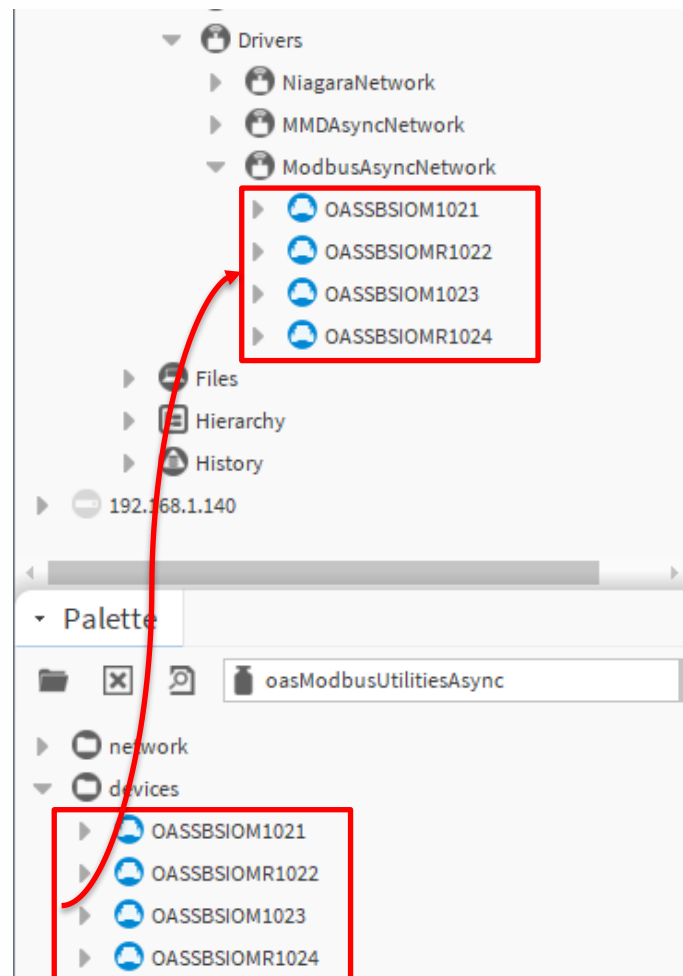
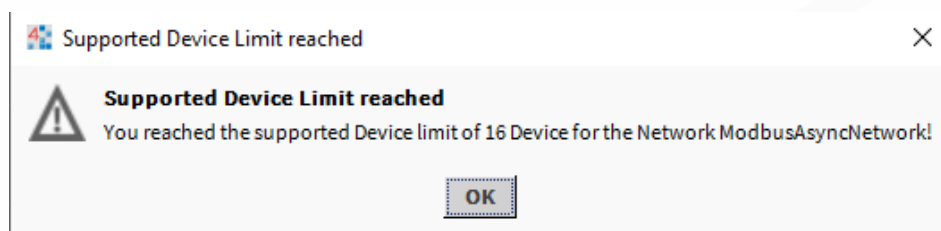


Figure 3: Adding Niagara OAS-SBS- devices to the network



If the number of added devices exceeds 16 the following warning will be shown:



4. An **OASSBSIOYXXXX**-component is pre-configured to enable communication with the corresponding OAS-Modbus-Modules. However, a **Device Address** must be provided, which matches to the Modbus address of the corresponding OAS-Modbus-Module.



OASSBSIOM1021 (Async Ai Module)

Status	{ok}
Enabled	☒ true
Fault Cause	
Health	Ok [10-11-20 2:21 PM CET]
Alarm Source Info	Alarm Source Info
Device Address	4 [1 - 247]
Modbus Config	false:order3210
Ping Address	Decimal 10
Ping Address Data Type	Integer Type
Ping Address Reg Type	Holding
Poll Frequency	Normal
Input Register Base Address	Hex 0
Holding Register Base Address	Hex 0
Coil Status Base Address	Hex 0
Input Status Base Address	Hex 0
Device Poll Config	Device Poll Config Table
Points	Modbus Client Point Device Ext
Modbus Data Mode	Use Network Data Mode
Module Configuration	Velocity Px View
Module Status	Velocity Px View
Configuration	Async Ai Configuration

Figure 4: Device Address configuration

4.2 Set up a TCP Network

To set up a working TCP network following steps must be performed.



The following steps can only be performed by an admin-user.

1. Drag the **ModbusTcpNetwork**-component from the **Network** folder of the **OASModbusUtilitiesTCP** palette and drop it onto **Drivers**.

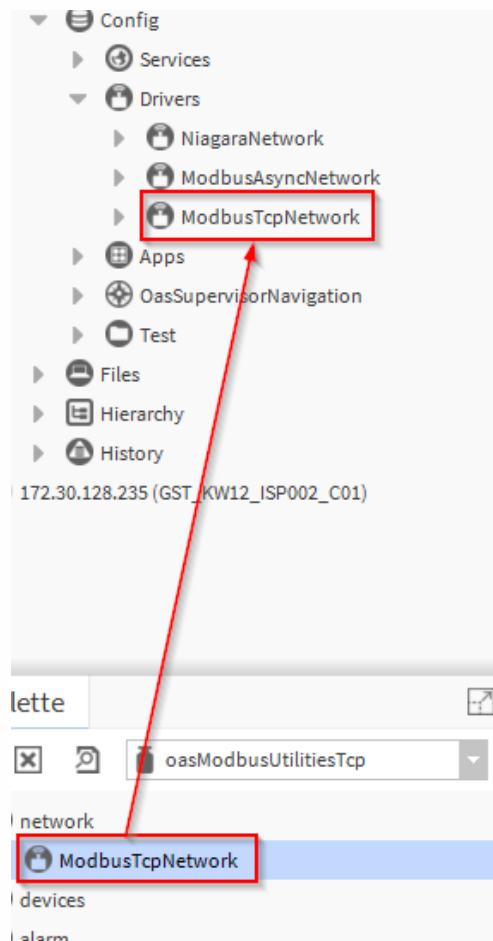
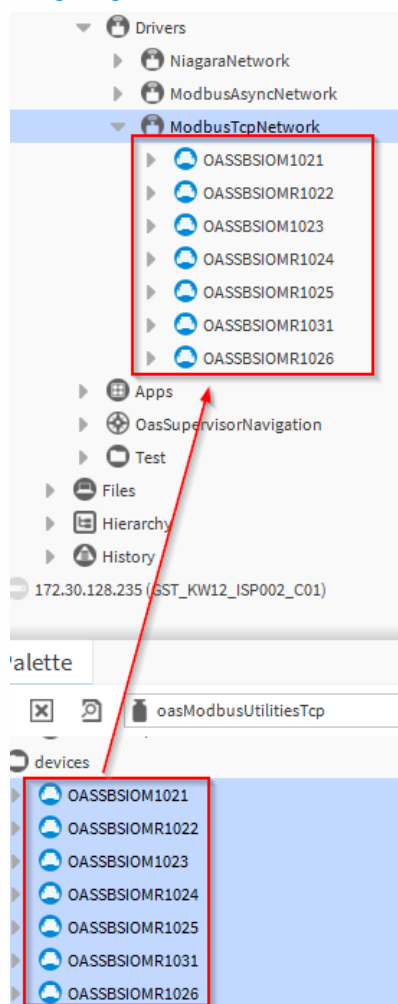


Figure 5: Adding a ModbusTCPNetwork to Drivers

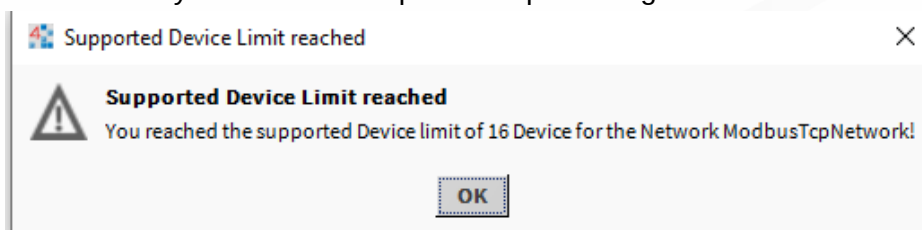
2. Drag an **OASSBSIOYXXXX**-component from the **devices** folder of the **OASModbusUtilitiesTCP** palette and drop it onto **OASModbusUtilitiesTCP**. The selected **OASSBSIOYXXXX**-component should be connected to a gateway.

Figure 6: Adding Niagara OAS-SBS- devices to the network



If the number of added devices exceeds 16 the following warning will be shown:

3. The OASModbusAsyncNetwork-Component is pre-configured to enable communication



with the OAS-Modbus-Modules. However, a **Device Address** and an **Ip Address** must be specified that match the addresses of the corresponding module or Gateway.

OASSBSIOMR1024 (Tcp Do Module)

Status	{disabled}
Enabled	☒ false
Fault Cause	
Health	Fail [null]
Alarm Source Info	Alarm Source Info
Device Address	-1 [0 - 255]
Modbus Config	false:order3210
Ping Address	Decimal 10
Ping Address Data Type	Integer Type
Ping Address Reg Type	Holding
Poll Frequency	Normal
Input Register Base Address	Hex 0
Holding Register Base Address	Hex 0
Coil Status Base Address	Hex 0
Input Status Base Address	Hex 0
Device Poll Config	Device Poll Config Table
Points	Modbus Client Point Device Ext
Ip Address	###.###.###.###
Port	502 [0 - 65535]
Socket Status	Open Failed
Disable Transaction Id Check	☒ false
Max Transaction Id	65535 [0 - 65535]
Rx Process Mode	☒ byte
Configuration	Tcp Do Configuration

Figure 7: Device address and IP address configuration

5 User Management

The OASModbusUtilities is designed to be installed and set up exclusively via the Niagara Workbench. The OAS I/O WEB Module configurator provided on the station is operated via a web interface. Therefore, the *Web-User* role must be set up.

5.1 Web-User

The web-user can only access the OAS I/O WEB Module-Configurator via a web browser (tested with Mozilla Firefox and Google Chrome). There, the web-user can view the status of the modules, as well as check and change the properties of the individual modules.

5.1.1 Configuration of Web-User Access

To set up an access for the web-user, the following configuration steps must be performed using the Niagara Workbench.

1. Create a nav-file. The nav-file must point to the previously created OASModbusUtilities network (in the example ModbusAsyncNetwork).

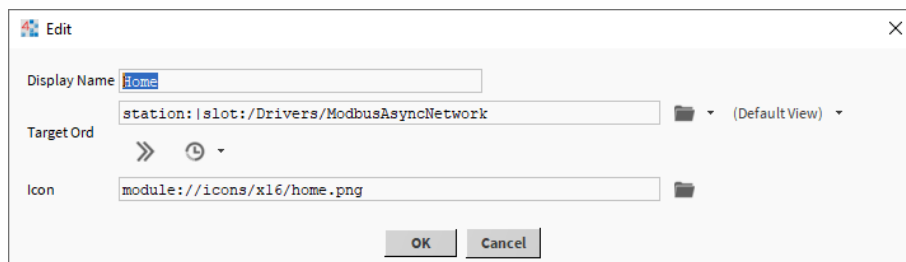


Figure 8: Web-User's Nav-File creation

This step is necessary so that the web-user is directed to the main page of OASModbusUtilities after logging in.

2. Create a category. Assign the ModbusAsyncNetwork or ModbusTcpNetwork to it. In the example the category was named “WebUser”, but the name can be chosen at will. Just remember the chosen name, as it will be needed later.

	Inherit	User	Admin	WebUser
Alarm	n/a	☒		
Config	n/a	☒		
Services	☒	☐		
Drivers	☒	☐		
NiagaraNetwork	☒	☐		
MMDAsyncNetwork			☒	☒
ModbusAsyncNetwork			☒	☒
Files	n/a		☒	
History	n/a	☒		

Figure 9: Web-User's category creation

3. Create a user role, remember the chosen name, as it is needed later, and assign the permissions as shown in the following figure. The category “WebUser” is the category created in the previous step. In your table you will see the category as you named it.

Permissions

Category	Operator			Admin		
	R	W	I	R	W	I
User	☒	☒	☒			
Admin	☒			☒		
WebUser	☒	☒	☒	☒	☒	☒
Category 5						
Category 6						
Category 7						
Category 8						

OK

Cancel

Figure 10: Web-User's Role creation

4. Create a user account. This account will be used to access the OASModbusUtilities via web-browser.
 - a. Assign the role, that was created in the previous step.
 - b. Assign the nav-file, that was created in the first step.
 - c. Change the **Default Web Profile** to **Handheld Hx Profile**
 - d. Assign the nav-file to **Mobile Web Profile** and change its type to **Handheld Hx Profile**.
 - e. Save the user account.

The screenshot shows the 'New' user account creation window. The 'Roles' section has 'Web User' selected (labeled 'a'). The 'Nav File' field is set to 'file:nav/webUser.nav' (labeled 'b'). The 'Default Web Profile' dropdown is set to 'Handheld Hx Profile' (labeled 'c'). The 'Mobile Nav File' field is set to 'file:nav/webUser.nav' (labeled 'd'). Other fields like 'Name', 'Full Name', 'Enabled', 'Expiration', 'Auto Logoff Settings', 'Network User', 'Prototype Name', 'Language', 'Authentication Scheme Name', 'Password', 'Confirm', 'Force Reset At Next Login', 'Email', 'Cell Phone Number', 'Facets', 'Unit Conversion', 'Time Format', and 'Mobile Web Profile' are also visible.

Figure 11: Web-User's Account creation

If all steps are done correctly, this account will only have access to the OASModbusUtilities.

6 Network Overview

The network overview displays the name and configuration of the network. Below the header all the OAS Modbus-modules are listed with their respective network address, name, and module type. This view allows a quick navigation to each module and gives a brief overview about the status of each module.

Version: 4.10.2.1.1	NewSupervisorTemplate ModbusTcpNetwork	
Module-Description	Module-Type	Config.
OASSBSIOM1021 - 172.30.128.230 : 5	SBS-IOM-1021	
OASSBSIOMR1022 - 172.30.128.230 : 3	SBS-IOMR-1022	
OASSBSIOM1023 - 172.30.128.230 : 4	SBS-IOM-1023	
OASSBSIOMR1031 - 172.30.128.230 : 1	SBS-IOMR-1031	

Figure 12: Network Overview for a TCP network

Four different OAS Modbus modules are shown above, all without an error message.

Version: 4.10.2.1.1	secondDevStation ModbusAsyncNetwork - none, 9600, 8, 1, None	
Module-Description	Module-Type	Config.
OASSBSIOMR1031 - -1	None	
OASSBSIOMR1026 - -1	None	
OASSBSIOM1021 - -1	None	
OASSBSIOMR1022 - -1	None	
OASSBSIOM1023 - -1	None	
OASSBSIOMR1024 - -1	None	
OASSBSIOMR1025 - -1	None	

Figure 13: Network Overview for an Async network

Shown above are six different OAS Modbus modules, all of which are deactivated (shaded gray).

Navigation

To access the “Module Status” view of an OAS Modbus module, click on the name of the module in the overview.



Clicking this icon will take you to the “Module Config” view of the OAS Modbus module.

Module Status

If the module types of the Niagara Modbus device and the physical OAS Modbus module do not match the following error will be shown. The red text shows the recognized module type.



Figure 14: Mismatching module type error

If a physical OAS Modbus module is unreachable (down), the background of the corresponding entry is set to yellow.



Figure 15: Down/Unreachable module error

If a physical OAS Modbus module is disabled, the background of the corresponding entry is set to gray.



Figure 16: Disabled module error

6.1 Page Header

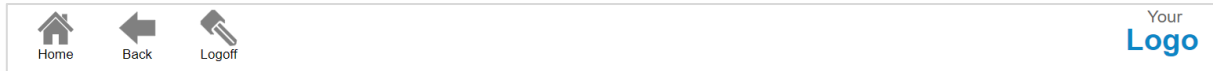


Figure 17: Default OAS Page Header

The admin-user can set or restore the default header by executing the action **copyPageHeader** in the network. A new file **PageHeader.px** will be created under **/files/px/** in the file system of your station.

How to use your own page header

If you want your own design for the px page header, name your file **PageHeader.px** and place it in the station file system under **/files/px/**.

It is recommended to use a px file with a height of 90.0 and a width of 1270.0.

How to use your own logo

If you only want to replace OAS logo with your company's own logo, proceed as following:

1. Open your Niagara workbench.
2. Make sure the file PageHeader.px already exists under **/files/px/** in your station.
3. Open PageHeader.px with the Px Editor.
4. Expand the widget tree in the right pane.
5. Double-click on *Picture*.

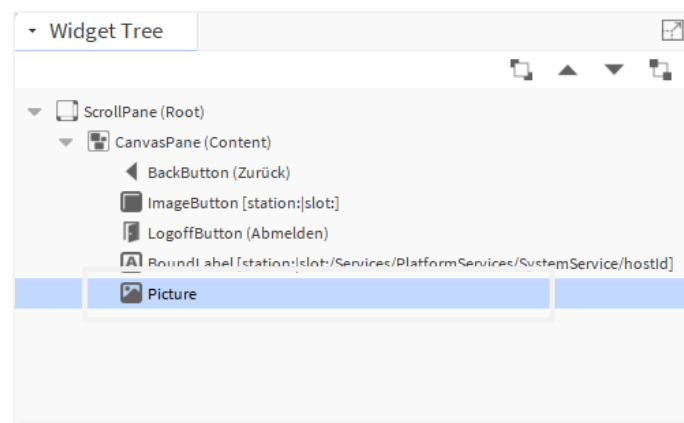


Figure 18: Widget Tree view of Page Header

6. A Pop-up menu will open. Click on the line "image" that is marked red in the figure.

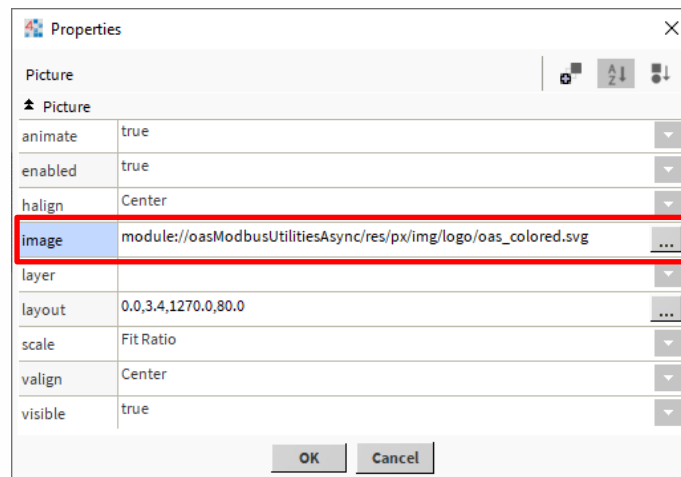


Figure 19: Properties view of picture

7. Select your own logo file and click ok to confirm.
8. Click on the pen symbol in your menu bar to save the changes and exit the px editor.



Figure 20: Toolbar of Px Editor

7 Physical OAS Modbus-Modules

7.1 General information

7.1.1 Autobauding

The autobauding is a feature of the OAS-Modbus modules that enables them to automatically detect the baud rate used on the bus. By setting this register it can be selected whether the automatic detection of the baud rate is always on or only in the first 5 minutes after cold start. Furthermore, autobauding can also be completely deactivated. In this case the module will operate with the baud rate that is set by the “Baud rate”-register.

The default value is set to ON.

Value	Description
Off	Deactivated
After Restart	Active the first 5 minutes after a restart of the physical OAS Modbus module
On	Always active

Table 2: Autobauding Modes List

7.1.2 Baud rate

This setting is only used if Autobauding is set to 'Off' or 'After Restart'. Possible Baudrates:

- 9600
- 19200
- 38400
- 57600

7.1.3 Module Type

This register holds the information about the type of the OAS Modbus module.

7.1.4 Firmware version

This register holds the information about the firmware version of the OAS Modbus module.

7.1.5 Timeout Seconds

If no valid bus telegram is received, the LED "Bus" starts flashing red. In this case the "safe state" is applied to the outputs if any has been defined. If valid telegrams are received their content will be passed to the outputs and the LED will flash green again. The *Timeout Seconds* register specifies how long a module will wait after receiving the last valid telegram before it switches to the *safe state* mode. The time is given in seconds.

The default value is 300 seconds.

Value	Description
1...3600 secs	Bus timeout time
0	Timeout and Safe state settings deactivated

Table 3: Timeout Settings List

7.1.6 Status LED

This register is used to control the colors of the two status LED of the OAS Modbus module. The status LEDs can be set independently to red, green, or yellow color. The LED "Status 1" flashes green at regular intervals by default.

7.1.7 Module Cmd

This register is used to send control commands to the OAS Modbus module.

Name	Description
Reset watchdog	Reset module via watchdog (including reset of all masks to default values!)
Short lamp test	Performs a short lamp test
Long lamp test	Performs a long lamp test
Reset masks	Resets all mask to factory defaults
Reset counter	Resets all counters to zero
Reset memory	Resets the EEPROM to factory default
Reset masks and memory	Performs 'Reset masks' and 'Reset memory' commands
Reset counter and memory	Performs 'Reset counter' and 'Reset memory'
Reset module	Resets the module to factory default

Table 4: Module Command List

7.1.8 Module Status

The module status represents the configuration status of the OAS Modbus module.

Value	Description
Ok	
WrongModuleType	Active module type and configured module are different
AutobaudingModified	Setpoint for Autobauding has been modified
BaudrateModified	Setpoint for baud rate has been modified (only if autobauding is off)
TimeoutModified	Setpoint for timeout has been modified
Modified	Configuration has been modified

Table 5: Module Status List

7.2 Actions

Several actions can be executed on each OAS Modbus module. To invoke an action, right-click **Configuration** of a module and select **Actions**. Most of the actions are explained in *Table 4: Module Command List*.

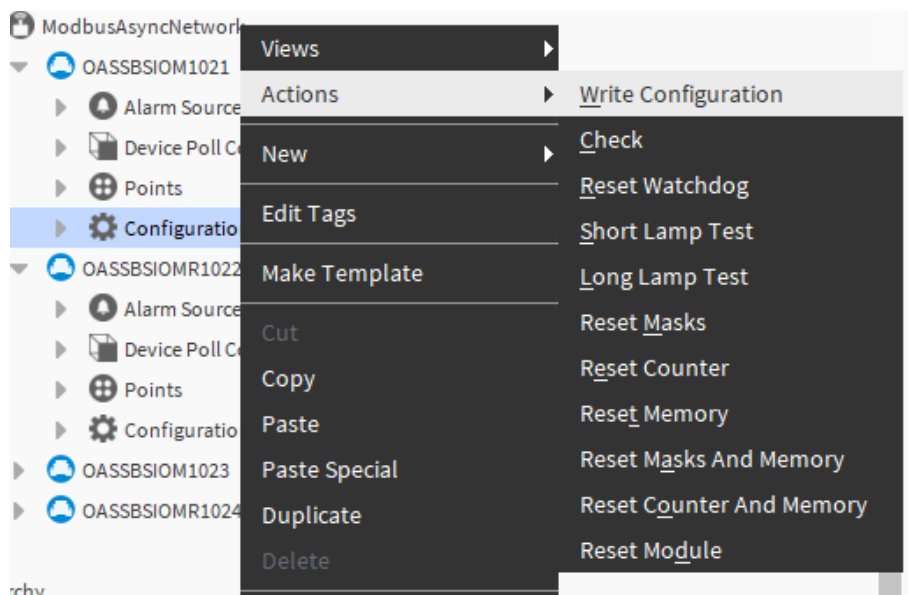


Figure 21: Module Actions

7.2.1 Write Configuration

All configuration that has been made will be written immediately onto the corresponding physical OAS Modbus module.

7.2.2 Check

Checks whether the configuration has been changed and validates it. If the configuration is valid, it is written to the corresponding physical OAS Modbus module, otherwise the module status (*Table 5: Module Status List*) is set according to the detected misconfiguration.



Attention: Some actions (Reset ...) will reset the module to factory settings.

7.3 OAS-SBS-IOM-1021

This OAS Modbus module provides 8 analog inputs. Active signals (0...10V) and various passive sensors (e.g. Pt1000, Ni1000) can be connected. For more information see the datasheet.



Figure 22: OAS-SBS-IOM-1021 physical module

Operational LEDs

Power	Description
Green	Module has power

Bus	Description
Red	No/faulty communication
Green	Flashes with communication transfer with the master

Status 1	Description
Green	OK, flashes at regular intervals
Yellow	Flashes if the actual module configuration differs to workbench/web interface settings

Status 2	Description
Never on	No function

Characteristic

The characteristics determine the type of the signal, that is connected to the input. The following characteristics can be set for each of the 8 points individually:

- 0...10 Volt
- 0...5 kOhm
- 0...15 kOhm
- Pt 100
- Pt 1000
- Ni 1000
- Ni 1000 L&G
- KTY81-110
- KTY81-210
- NTC 20k
- NTC 10k
- KP10 / LM235

Minimum and maximum In-/Output values

If a characteristic of a point is set to "0...10 Volt" the input and output can be scaled from 0 to 100 %.

7.3.1 Module Config View

The following figure shows the web interface of the OAS-SBS-IOM-1021 module, that a web-user can access. Here he can inspect basic information about the module and change the characteristics. To save the configuration click on the **save** button in the lower right corner.



Figure 23: OAS-SBS-IOM-1021 Config View

Characteristic

The characteristic for each point can be set here. By clicking on the characteristic of a point, a menu will open, prompting you to set the characteristic.

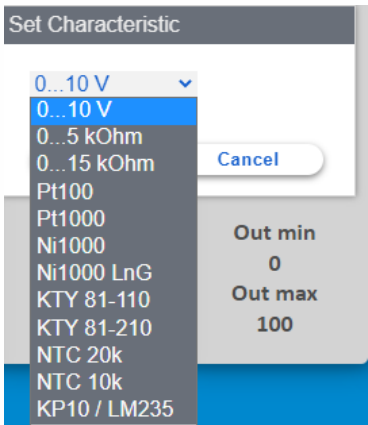


Figure 24: OAS-SBS-IOM-1021 Set-Characteristics Dialog

Minimum and maximum value

If the characteristic is set to “0... 10V”, you can also set minimum/maximum values for the in- and output. If you want to change those values, simply click on them. A pop-up menu will appear.

7.3.2 Module Status View

In the case of the AI, the Module Status is a display for the scaled values (raw values are in the Active Raw Input), in which nothing can be set.

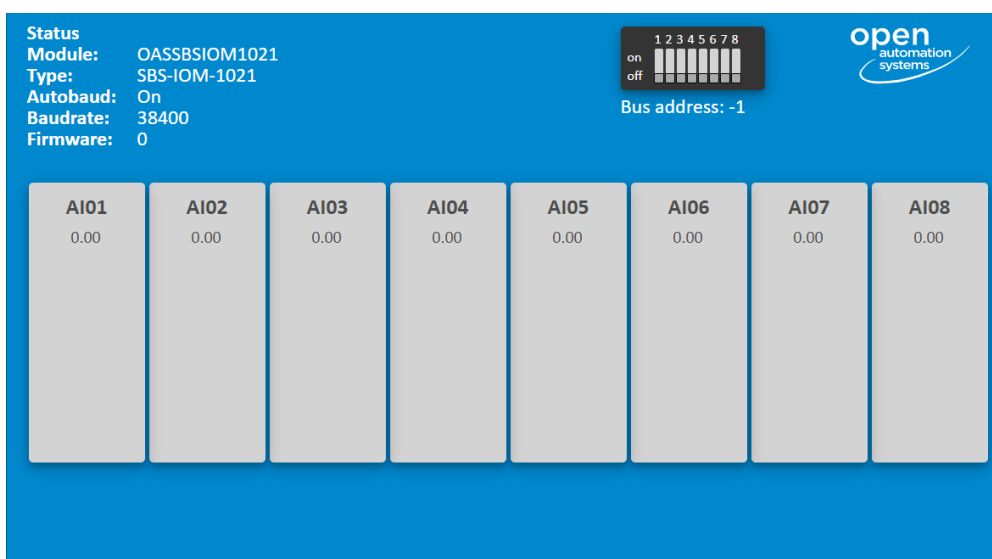


Figure 25: OAS-SBS-IOM-1021 Module Status View

7.3.3 Niagara Workbench Interface

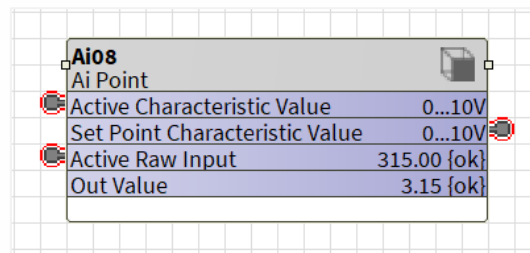
The Niagara Workbench Interface is only accessible by an admin-user. It enables an admin-user to perform fine-tuning on the OAS Modbus module and connect the modules with the control logic running on the Niagara station.

Configuration (Async Ai Configuration)	
Status	{ok}
Active Module Type	SBS_IOM_1021
Set Point Module Type	SBS_IOM_1021
Active Autobauding	Ein
Set Point Autobauding	Ein
Active Baudrate	38400
Set Point Baudrate	38400
Active Timeout	300.00 {ok}
Set Point Timeout	300.00 s {ok}
Display Address	4.00 {ok}
Display Firmware	29.00 {ok}
Check Interval	+000000h 05m 00s
▶ Ai01	3.33 {ok}
▶ Ai02	3.24 {ok}
▶ Ai03	3.23 {ok}
▶ Ai04	3.35 {ok}
▶ Ai05	3.33 {ok}
▶ Ai06	3.17 {ok}
▶ Ai07	3.11 {ok}
▶ Ai08	3.27 {ok}

Figure 26: OAS-SBS-IOM-1021 AX Property Sheet View

Wiresheet

The figure below shows the Wiresheet view of the analog input point of an OAS-SBS-IOM-1021 module.



Ai08	
Ai Point	
Active Characteristic Value	0...10V
Set Point Characteristic Value	0...10V
Active Raw Input	315.00 {ok}
Out Value	3.15 {ok}

Figure 27: OAS-SBS-IOM-1021 Ai Point

Active Raw Input

This value is the actual raw value that comes from the module.

Out Value

This value displays the scaled value depending on the characteristic that was set.

7.3.3.1 Error detection

The OAS Modbus module OAS-SBS-IOM-1021 can be extended with an alarm, that can signal sensor breaks, short circuit, and other sensor errors. The alarm can be attached to each Ai point individually. To set up an error detection the following steps must be performed:

1. Drag the **ErrorDetection** component from the **alarm** folder of the **OASModbusUtilities** palette and drop it onto an **Ai-Point**.

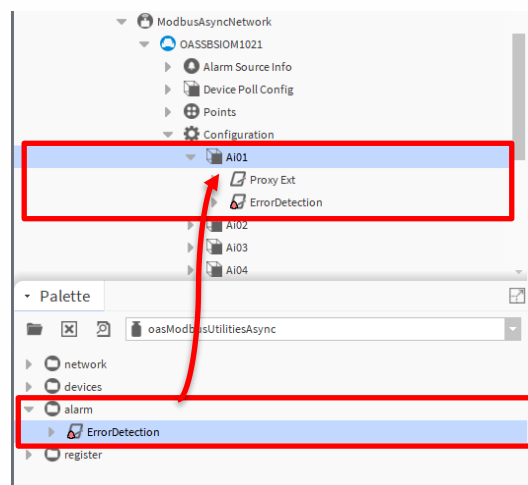


Figure 28: OAS-SBS-IOM-1021 Attaching alarm to Ai point



2. Set the **Time Delay** and **Time Delay to Normal** if other values than 1sec is required.

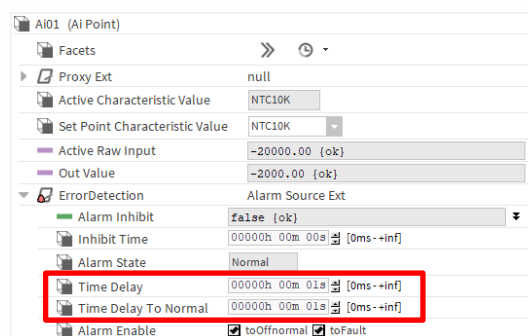


Figure 29: OAS-SBS-IOM-1021 Setting Time Delay and Time Delay to Normal



3. To handle a *short circuit error* or a *sensor error* (sensor break), you can set the **Sensor Error Value**, the **Error Solution** strategy, and the **Error Detection Text**.

- a. **Sensor Error Value:** Raw value, that signals the error type. The defaults are -10000 for short circuit and -20000 for sensor break. (See the modules datasheet for more information.)
- b. **Error Solution:** Determines which value should be forwarded to the out-Slot of the Ai-Point if an error was detected. The modes **Last Value** (keeps the last valid value), **Alternative Value** (takes the given alternative value) and **Null Value** (takes *null*) are available.
- c. **Error Detection Text:** Message text, that will be printed to alarm console.

▼ Fault Algorithm		Short Circuit Algorithm	
Sensor Error Value	-10000.00		
Error Solution	Last Value		
Alternative Value	-50.00		
Error Detection Text	ⓘ		
▼ Offnormal Algorithm		Sensor Error Algorithm	
Sensor Error Value	-20000.00		
Error Solution	Last Value		
Alternative Value	150.00		
Error Detection Text	ⓘ		
Alarm Class	Default Alarm Class		
Meta Data	» ⌚ ▼		

Figure 30: OAS-SBS-IOM-1021 Short Circuit and Sensor Error Handling

7.4 OAS-SBS-IOMR-1022

This OAS Modbus module provides 8 analog outputs. Each output can serve a signal between 0 and 10 volts. For more information see the datasheet.



Figure 31: OAS-SBS-IOMR-1022 physical module

Operational LEDs

Power	Description
Green	Modul has power

Bus	Description
Red	No/faulty communication
Green	Flashes with communication transfer with the master

Status 1	Description
Green	OK, flashes at regular intervals
Yellow	Flashes if the actual module configuration differs to workbench/web interface settings

Status 2	Description
Red	On when at least one slide switch is not in the position Auto
Off	All slide switches are in the position Auto

7.4.1 Module Config View

The following figure shows the web interface of the OAS-SBS-IOMR-1022 module, that a web-user can access. Here he can inspect basic information about the module and change the characteristics. To save the configuration click on the **save** button in the lower right corner.

Figure 32: OAS-SBS-IOMR-1022 Config View

Safe Position Status

You can set the safe position status by clicking on the entry below **Safe Pos**.

The switches do not display the actual values of the module outputs.

Safe Position Value

The safe position value can only be set if the safe position status is set to **ON**. If the safe position status is set to **OFF**, the safe position value will be greyed out and set to **Last Value**.

You can set the safe position value by clicking the entry below **Position**. A pop-up will appear, prompting you set a value between 0 and 100 %.

7.4.2 Module Status View

The Module Status View shows the feedback value and the manual switch status. The switch can be set by clicking on AutoCmd.

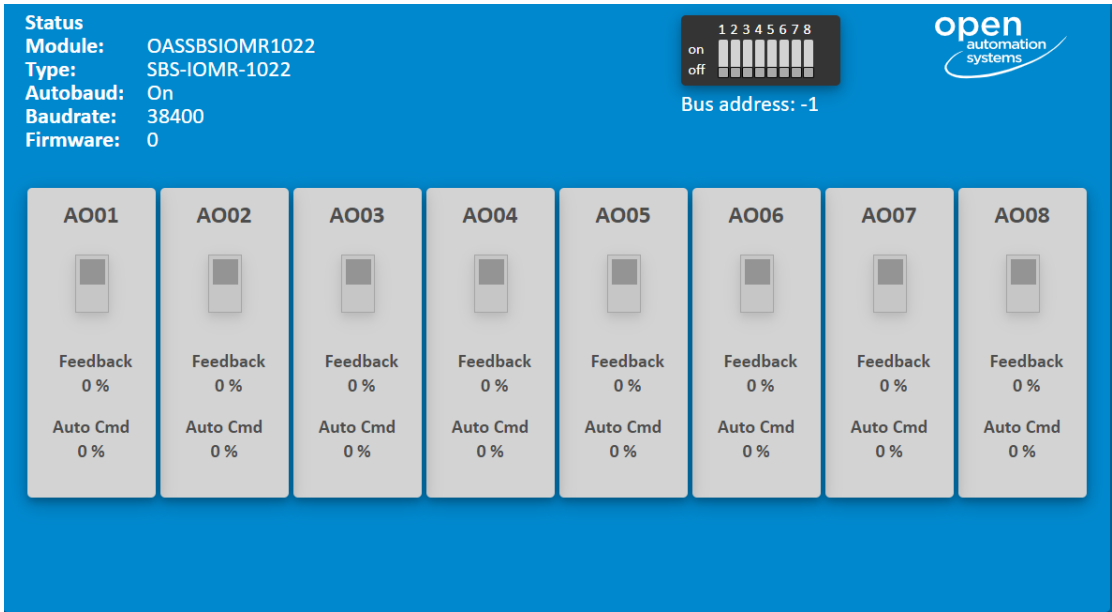


Figure 33: OAS-SBS-IOMR-1022 Status View

7.4.3 Niagara Workbench Interface

The Niagara Workbench Interface is only accessible by an admin-user. It enables an admin-user to perform fine-tuning on the OAS Modbus module and connect the modules with the control logic running on the Niagara station.

Configuration (Async Ao Configuration)	
Status	{ok}
Active Module Type	SBS_IOMR_1022
Set Point Module Type	SBS_IOMR_1022
Active Autobauding	Ein
Set Point Autobauding	Ein
Active Baudrate	38400
Set Point Baudrate	38400
Active Timeout	300.00 {ok}
Set Point Timeout	300.00 s {ok}
Display Address	2.00 {ok}
Display Firmware	24.00 {ok}
Check Interval	+000000h 05m 00s
Min Write Time	000000h 00m 02s [1sec - 10secs]
Max Write Time	000000h 01m 00s [10secs - 1hour]
Active On Side Switch Status	255.00 {ok}
Active On Side Switch Value	254.00 {ok}
Active Save Position Status	254.00 {ok}
Set Point Save Position Status	254.00 {ok}
▶ Ao01	Ao Point
▶ Ao02	Ao Point
▶ Ao03	Ao Point
▶ Ao04	Ao Point
▶ Ao05	Ao Point
▶ Ao06	Ao Point
▶ Ao07	Ao Point
▶ Ao08	Ao Point

Figure 34: OAS-SBS-IOMR-1022 AxProperty Sheet View

CoV reduction

The purpose of the CoV Reduce routine is to prevent the Modbus from being slowed down by too many CoV telegrams.

For this purpose, two time-bound processes are established to check whether:

1. no value has been written for too long (Min Write Time)
2. too many values are written in a short time (Max Write Time)

Min Write Time

To ensure that values are updated after a certain time even if there are no CoV events on the module, a timer is implemented to write the current value after a defined time.

This timer only comes into effect if within the “Min Write Time” no CoV event occurs and the configured “Min Write Time” has elapsed. If these criteria are met, a write action is executed, the current time is stored, and the timer is restarted.

The default time for “Min Write Time” is 5 minutes.

Max Write Time

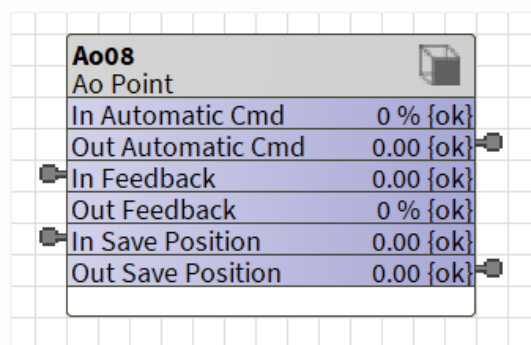
To prevent too many CoVs being sent over the bus, the time of the CoV event is stored. If the time difference from the last event is less than the “Max Write Time”, no write action will be performed.

If the limit of the configured “Max Write Time” is exceeded, the “Max Write Time” timer is stopped. The write action is executed, the execution time is saved, and the “Max Write Time” timer is restarted.

The default time for “Max Write Time” is 1 second.

Wiresheet

The figure below shows the wiresheet view of the analog output point of an OAS-SBS-IOMR-1022 module.



Ao08		
Ao Point		
In Automatic Cmd	0 % {ok}	
Out Automatic Cmd	0.00 {ok}	
In Feedback	0.00 {ok}	
Out Feedback	0 % {ok}	
In Save Position	0.00 {ok}	
Out Save Position	0.00 {ok}	

Figure 35: OAS-SBS-IOMR-1022 Ao Point

In Automatic Cmd

This slot is for the value of the automatic output control signal.

Out Automatic Cmd

This slot is for the raw value of the automatic command that will be written on the module. The link must not be removed.

In Feedback / Out Feedback

These slots are for raw (In Feedback) and scaled (Out Feedback) values. Out Feedback always reports the actual output value, regardless of whether the module is set to Poti or Auto.

In Save Position / Out Save Position

These slots are for scaled (In Save Position) and unscaled (Out Save Position) values. The links must not be removed.

7.5 OAS-SBS-IOM-1023

This OAS Modbus module provides 16 digital inputs. The inputs can also be used as counters. For more information see the datasheet.



Figure 36: OAS-SBS-IOM-1023 physical module

Operational LEDs

Power	Description
Green	Modul has power

Bus	Description
Red	No/faulty communication
Green	Flashes with communication transfer with the master

Status 1	Description
Green	OK, flashes at regular intervals
Yellow	Flashes if the actual module configuration differs to workbench/web interface settings

Status 2	Description
Never on	No function

7.5.1 Module Config View

The following figure shows the web interface of the OAS-SBS-IOM-1023 module, that a web-user can access. Here he can inspect basic information about the module and change the characteristics. To save the configuration click on the **save** button in the lower right corner.

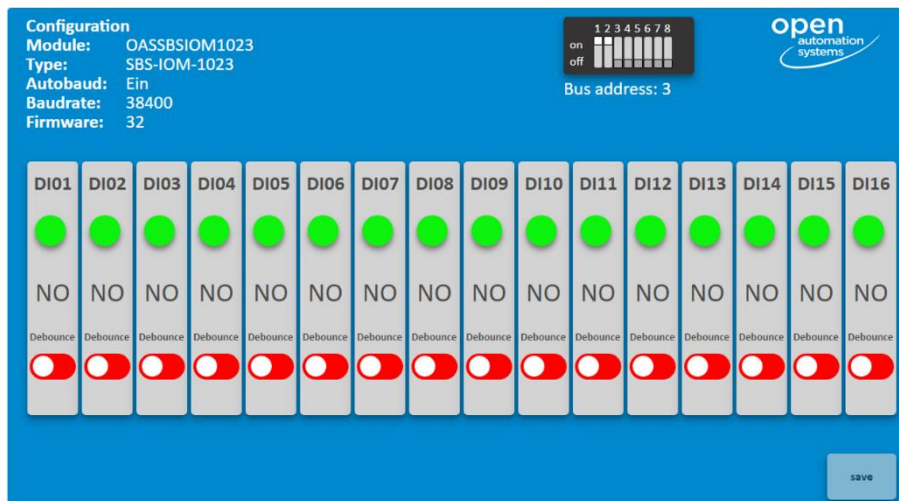


Figure 37: OAS-SBS-IOM-1023 Module Config View

LED color

The color of each point can be set by clicking on LED circle. The following colors are available:

- red
- green
- yellow
- off/no color

Switch Logic

The settings for the switch logic determine if an input is normally closed or normally open (inverted)

Bounce protection

This setting determines if the recognition of a change of the input signal is to be delayed.

The delay time is set to 100ms.

7.5.2 Module Status View

The Module Status View shows the status of the DI points of the OAS Modbus module.

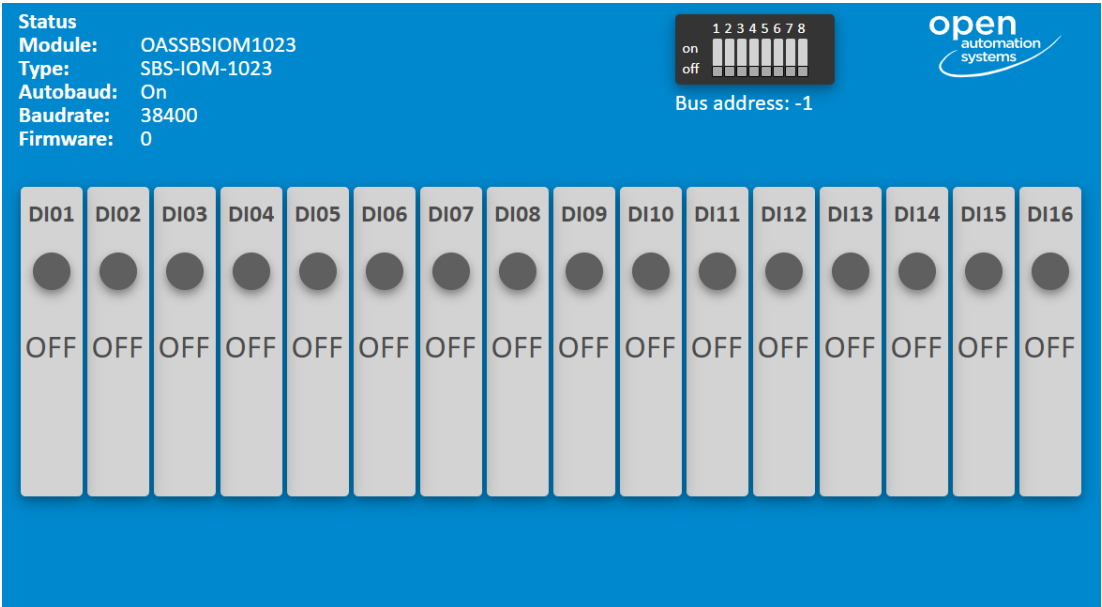


Figure 38: OAS-SBS-IOM-1023 Module Status View

7.5.3 Niagara Workbench Interface

The Niagara Workbench Interface is only accessible by an admin-user. It enables an admin-user to perform fine-tuning on the OAS Modbus module and connect the modules with the control logic running on the Niagara station.

Configuration (Async Di Configuration)	
Status	{ok}
Active Module Type	SBS_IOM_1023
Set Point Module Type	SBS_IOM_1023
Active Autobauding	Ein
Set Point Autobauding	Ein
Active Baudrate	38400
Set Point Baudrate	38400
Active Timeout	300.00 {ok}
Set Point Timeout	300.00 s {ok}
Display Address	3.00 {ok}
Display Firmware	32.00 {ok}
Check Interval	+000000h 05m 00s
Active Led Red Value	0.00 {ok}
Set Point Led Red Value	0.00 {ok}
Active Led Green Value	65535.00 {ok}
Set Point Led Green Value	65535.00 {ok}
Active Switch Logic Value	0.00 {ok}
Set Point Switch Logic Value	0.00 {ok}
Active Bounce Protection Value	0.00 {ok}
Set Point Bounce Protection Value	0.00 {ok}
Input	0.00 {ok}
Di01	Di Point
Di02	Di Point
Di03	Di Point
Di04	Di Point
Di05	Di Point
Di06	Di Point
Di07	Di Point
Di08	Di Point
Di09	Di Point
Di10	Di Point
Di11	Di Point
Di12	Di Point

Figure 39: OAS-SBS-IOM-1023 AxProperty Sheet View

Wiresheet

The figure below shows the wiresheet view of the digital input point of a OAS-SBS-IOM-1023 module.

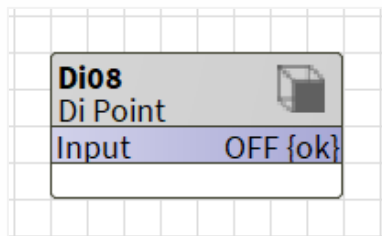


Figure 40: OAS-SBS-IOM-1023 Di Point

Input

This slot displays the actual binary input value.

7.5.3.1 Counter feature

If the digital inputs of the OAS Modbus module should be used as counters the following steps must be performed:

1. Drag a **CounterXX** component from **register/DICounter** folder of the **OASModbusUtilitiesAsync** palette and drop it onto **Points/Points** folder of the Niagara device, as shown in the following figure.

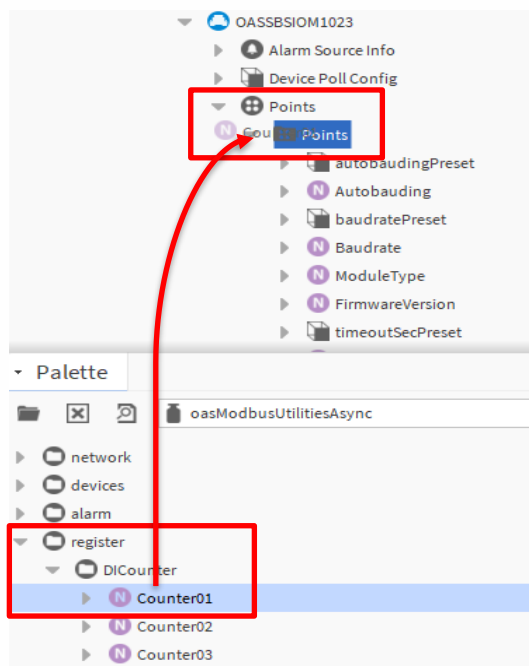


Figure 41: OAS-SBS-IOM-1023 Setting up a counter

2. Go to the wiresheet of the Points/Points folder and link the out-slot of CounterXX to the component of your choice to get the counters value.

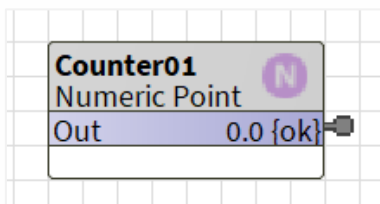


Figure 42: OAS-SBS-IOM-1023 Counterpoint

Note: Each of the CounterXX components is bound to a certain preset register of the OAS Modbus module.



Each connection of a counter component consumes one additional data point (license global capacity).

7.6 OAS-SBS-IOMR-1024

This OAS Modbus module provides 8 digital outputs. For more information see the datasheet.

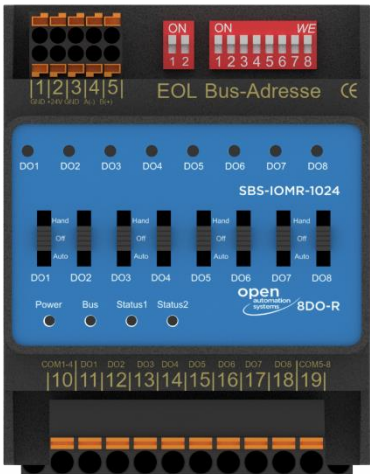


Figure 43: OAS-SBS-IOMR-1024 physical module

Operational LEDs

Power	Description
Green	Modul has power

Bus	Description
Red	No/faulty communication
Green	Flashes with communication transfer with the master

Status 1	Description
Green	OK, flashes at regular intervals
Yellow	Flashes if the actual module configuration differs to workbench/web interface settings

Status 2	Description
Red	On when at least one slide switch is not in the position Auto
Off	All slide switches are in the position Auto

7.6.1 Module Config View

The following figure shows the web interface of the OAS-SBS-IOMR-1024 module, that a web-user can access. Here he can inspect basic information about the module and change the characteristics. To save the configuration click on the **save** button in the lower right corner.

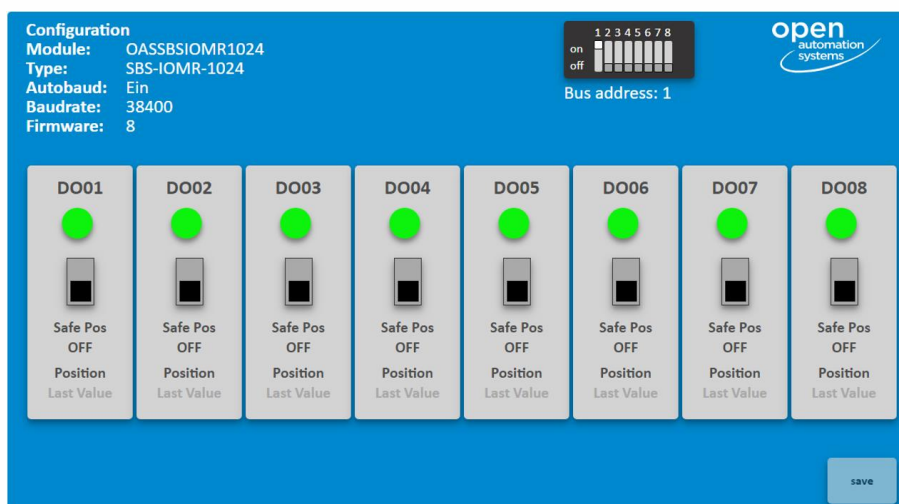


Figure 44: OAS-SBS-IOMR-1024 Module Config View

LED color

The color of each point can be set by clicking on LED circle. The following colors are available:

- red
- green
- yellow
- off/no color

Safe Position Status

You can set the safe position status by clicking on the entry below **Safe Pos**.

The switches do not display the actual values of the module.

Safe Position Value

The safe position value can only be set if the safe position status is set to **ON**. If the safe position status is set to **OFF**, the safe position value will be greyed out and set to **Last Value**.

7.6.2 Module Status View

The Module Status View offers the option of setting the Auto Cmd, displaying the feedback and the manual switch status.

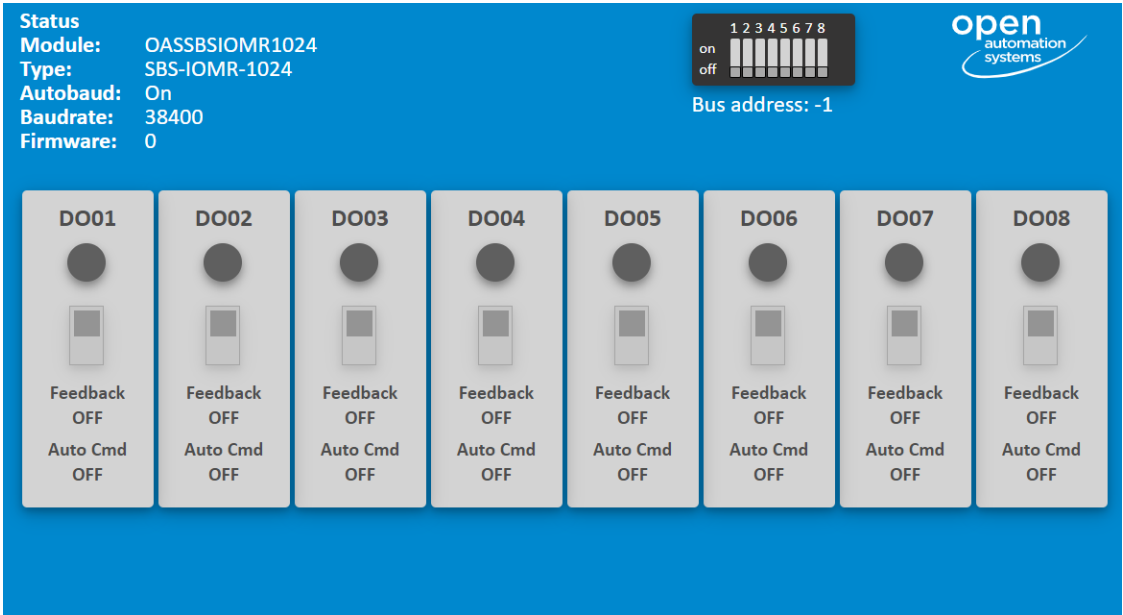


Figure 45: OAS-SBS-IOMR-1024 Module Status View

7.6.3 Workbench Interface

The Niagara Workbench Interface is only accessible by an admin-user. It enables an admin-user to perform fine-tuning on the OAS Modbus module and connect the modules with the control logic running on the Niagara station.

Configuration (Async Do Configuration)	
Status	{ok}
Active Module Type	SBS_IOMR_1024
Set Point Module Type	SBS_IOMR_1024
Active Autobauding	Ein
Set Point Autobauding	Ein
Active Baudrate	38400
Set Point Baudrate	38400
Active Timeout	300.00 {ok}
Set Point Timeout	300.00 s {ok}
Display Address	1.00 {ok}
Display Firmware	8.00 {ok}
Check Interval	+000000h 05m 05s
Min Write Time	000000h 00m 02s [1sec-10secs]
Max Write Time	000000h 01m 00s [10secs-1hour]
Active On Side Switch Status	255.00 {ok}
Active On Side Switch Value	255.00 {ok} @ def
Active Led Red Value	0.00 {ok} @ def
Set Point Led Red Value	0.00 {ok}
Active Led Green Value	255.00 {ok} @ def
Set Point Led Green Value	255.00 {ok}
Active Save Position Status	0.00 {ok} @ def
Set Point Save Position Status	0.00 {ok}
Active Save Position Value	255.00 {ok} @ def
Set Point Save Position Value	255.00 {ok}
Feedback Value	0.00 {ok} @ def
Automatic Cmd	0.00 {ok}
Do01	Do Point
Do02	Do Point
Do03	Do Point
Do04	Do Point
Do05	Do Point

Figure 46: OAS-SBS-IOMR-1024 AxProperty Sheet View

CoV reduction

The purpose of the CoV Reduce routine is to prevent the Modbus from being slowed down by too many CoV telegrams.

For this purpose, two time-bound processes are established to check whether:

1. no value has been written for too long (Min Write Time)
2. too many values are written in a short time (Max Write Time)

Min Write Time

To ensure that values are updated after a certain time even if there are no CoV events on the module, a timer is implemented to write the current value after a defined time.

This timer only comes into effect if within the “Min Write Time” no CoV event occurs and the configured “Min Write Time” has elapsed. If these criteria are met, a write action is executed, the current time is stored, and the timer is restarted.

The default time for “Min Write Time” is 5 minutes.

Max Write Time

To prevent too many CoVs being sent over the bus, the time of the CoV event is stored. If the time difference from the last event is less than the “Max Write Time”, no write action will be performed.

If the limit of the configured “Max Write Time” is exceeded, the “Max Write Time” timer is stopped. The write action is executed, the execution time is saved, and the “Max Write Time” timer is restarted.

The default time for “Max Write Time” is 1 second.

Wiresheet

The figure below shows the wiresheet view of the digital output point of an OAS-SBS-IOMR-1024 module.

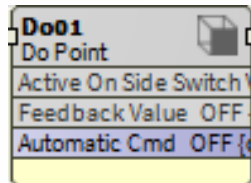


Figure 47: OAS-SBS-IOMR-1024 Do Point

Active On Side Switch

This slot shows the current position of the manual switch on the physical OAS Modbus module.

Feedback Value

This slot displays the binary feedback value on the module. Feedback Value always reports the actual output value, regardless of whether the module is set to Hand, Off or Auto.

Automatic Cmd

This slot is used for setting the output value of the output point. This slot is for the value of the automatic switching command.

7.7 OAS-SBS-IOMR-1025

This OAS Modbus module with digital inputs **and** outputs. It has two 3-point relay outputs 230V / 3A in two groups, for controlling two OPEN-STOP-CLOSE drives or similar, as well as four digital inputs for switching and signaling four messages, such as for operating, fault, or status messages. For further information see the data sheet.



Figure 48: OAS-SBS-IOMR-1025 physical module

Operational LEDs

Power	Description
Green	Modul has power

Bus	Description
Red	No/faulty communication
Green	Flashes with communication transfer with the master

Status 1	Description
Green	OK, flashes at regular intervals
Yellow	Flashes if the actual module configuration differs to workbench/web interface settings

Status 2	Description
Red	On when at least one slide switch is not in the position Auto
Off	All slide switches are in the position Auto

7.7.1 Module Config View

The following figure shows the web interface of the OAS-SBS-IOMR-1025 module, that a web-user can access. Here he can inspect basic information about the module and change the characteristics. To save the configuration click on the **save** button in the lower right corner.

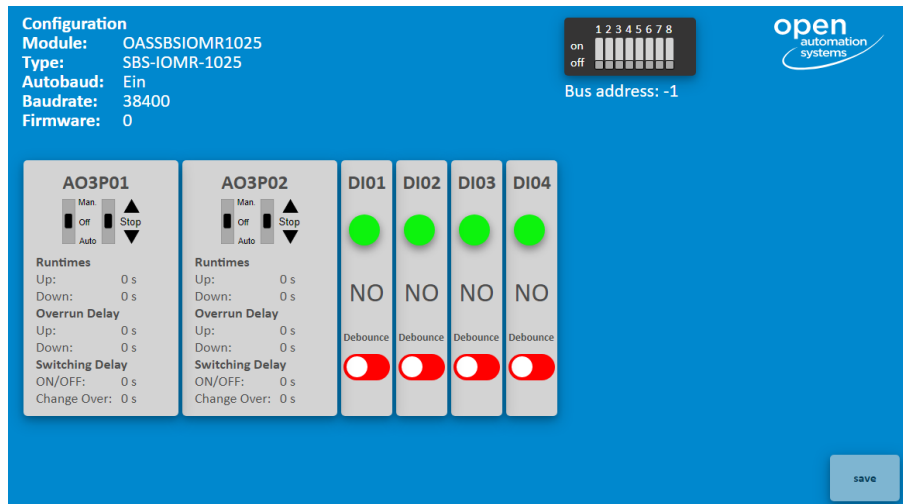


Figure 49: OAS-SBS-IOMR-1025 Module Config View

Runtimes

The runtime determines the runtime for a drive. The duration for the UP and DOWN runtimes can be set separately by clicking on the time value in AO3P01 or AO3P02.

The default values are 60 seconds.

Overrun Delay

Sets the delay time for when a blind moves to the 100% (Up) or 0% (Down) position.

The default values are 0 seconds.

Switching Delay

ON/OFF: Sets delay time (pause) until the blinds are activated again (default: 2 seconds).

Change Over: Sets the delay time (pause) until a blind is activated in the opposite direction (default: 2 seconds).

If the delay time for "ON/OFF" is greater than the delay for "Change Over", then the longer time for "ON/OFF" will be effective.

LED color

The color of each point can be set by clicking on LED circle. The following colors are available:

- red
- green
- yellow
- off/no color

Switch Logic

The settings for the switch logic determine if an input is normally closed or normally open (inverted).

Bounce protection

This setting determines if the recognition of a change of the input signal is to be delayed.
The default delay time is set to 100ms.

7.7.2 Module Status View

The Module Status View offers the option of setting the AutoCmd for the 3-point outputs. The feedback and the output status are also displayed. For the DI points the input value and the current LED color can be read.

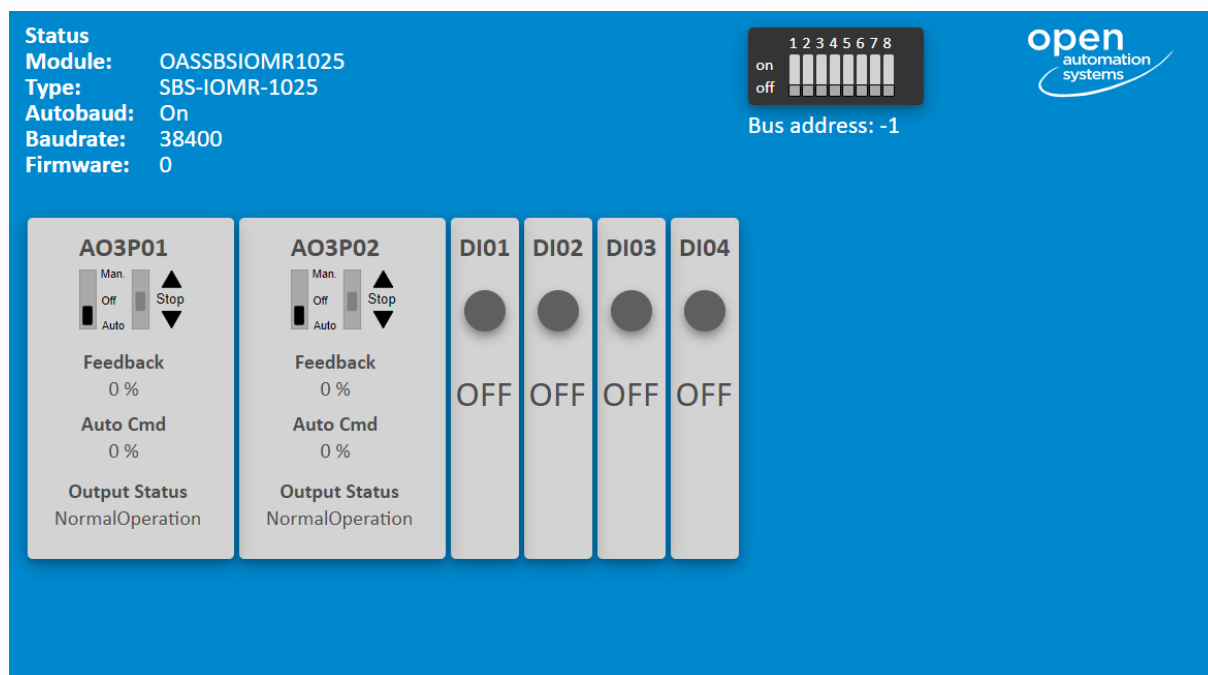


Figure 50: OAS-SBS-IOMR-1025 Module Status View

7.7.3 Niagara Workbench Interface

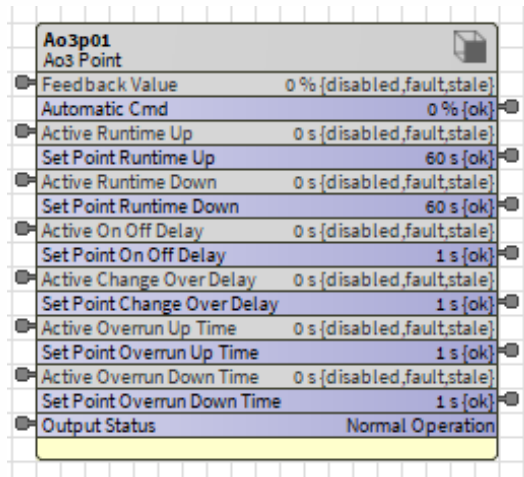
The Niagara Workbench Interface is only accessible by an admin-user. It enables an admin-user to perform fine-tuning on the OAS Modbus module and connect the modules with the control logic running on the Niagara station.

Configuration (Async Ao3 Configuration)	
Status	{Offline}
Active Module Type	NONE
Set Point Module Type	SBS_IOMR_1025
Active Autobauding	Aus
Set Point Autobauding	Ein
Active Baudrate	38400
Set Point Baudrate	38400
Active Timeout	0.00 {disabled, fault, stale}
Set Point Timeout	300.00 s {ok}
Display Address	5.00 {ok}
Display Firmware	0.00 {disabled, fault, stale}
Check Interval	+000000h 05m 00s
Min Write Time	000000h 00m 02s [1sec-10secs]
Max Write Time	000000h 01m 00s [10secs-1hour]
Active On Side Switch Status	0.00 {disabled, fault, stale}
Active On Side Switch Value	0.00 {disabled, fault, stale}
Active Led Red Value	0.00 {disabled, fault, stale}
Set Point Led Red Value	15.00 {ok}
Active Led Green Value	0.00 {disabled, fault, stale}
Set Point Led Green Value	240.00 {ok}
Active Switch Logic Value	0.00 {disabled, fault, stale}
Set Point Switch Logic Value	0.00 {ok}
Active Bounce Protection Value	0.00 {disabled, fault, stale}
Set Point Bounce Protection Value	0.00 {ok}
Active Enable Channels	0.00 {ok}
Set Point Enable Channels	0.00 {ok}
Input	0.00 {disabled, fault, stale}
Ao3p01	Ao3 Point
Ao3p02	Ao3 Point
Di01	Di Point
Di02	Di Point
Di03	Di Point
Di04	Di Point

Figure 51: OAS-SBS-IOMR-1025 AxProperty Sheet View

Wiresheet

The figure below shows the wiresheet view of the digital output point of an OAS-SBS-IOMR-1025 module.



Ao3p01 Ao3 Point	
Feedback Value	0 % {disabled,fault,stale}
Automatic Cmd	0 % {ok}
Active Runtime Up	0 s {disabled,fault,stale}
Set Point Runtime Up	60 s {ok}
Active Runtime Down	0 s {disabled,fault,stale}
Set Point Runtime Down	60 s {ok}
Active On Off Delay	0 s {disabled,fault,stale}
Set Point On Off Delay	1 s {ok}
Active Change Over Delay	0 s {disabled,fault,stale}
Set Point Change Over Delay	1 s {ok}
Active Overrun Up Time	0 s {disabled,fault,stale}
Set Point Overrun Up Time	1 s {ok}
Active Overrun Down Time	0 s {disabled,fault,stale}
Set Point Overrun Down Time	1 s {ok}
Output Status	Normal Operation

Figure 52: OAS-SBS-IOMR-1025 Ao3p Point

Feedback Value

This slot displays the percentage feedback value on the module. Feedback Value always reports the actual output value, whether the module is set to Man, OFF, or Auto.

Automatic Cmd

This slot is used for setting the output value of the point. This slot is for the value of the automatic control signal.

Active/Set Point Runtime Up

These slots are used for reading and setting the value for “Runtime Up”.

Active/Set Point Runtime Down

These slots are used for reading and setting the value for “Runtime Down”.

Active/Set On Off Delay

These slots are used for reading and setting the time value for “On/Off Delay”.

Active/Set Point Change Over Delay

These slots are used for reading and setting the time value for “Change Over Delay”.

Active/Set Point Overrun Up Time

These slots are used for reading and setting the time value for “Overrun Up Time”.

Output Status

This slot displays the status of the blind. Possible statuses are:

- Normal Operation
- Manual, Pause
- Manual, Opening
- Manual, Closing
- Switch On Delay (is currently active)
- Change Over Delay (is currently active)
- Initial Run (is currently active)

7.8 OAS-SBS-IOMR-1026

The OAS Modbus module has four digital outputs and is used to control four lighting circuits or similar. It offers the option of manually overriding the switching commands for the DOs received via the Modbus using the pushbuttons and thus realizing local priority operation. The relay outputs each provide the NO contact of a relay. They are realized with bistable relays.



Figure 53: OAS-SBS-IOMR-1026 physical module

Operational LEDs

Power	Description
Green	Modul has power

Bus	Description
Red	No/faulty communication
Green	Flashes with communication transfer with the master

Status 1	Description
Green	OK, flashes at regular intervals
Yellow	Flashes if the actual module configuration differs to workbench/web interface settings

Status 2	Description
Red	On when at least one output is not in the position Auto
Off	All outputs are in the position Auto

7.8.1 Module Config View

The following figure shows the web interface of the OAS-SBS-IOMR-1026 module, that a web-user can access. Here he can inspect basic information about the module and change the characteristics. To save the configuration click on the **save** button in the lower right corner.

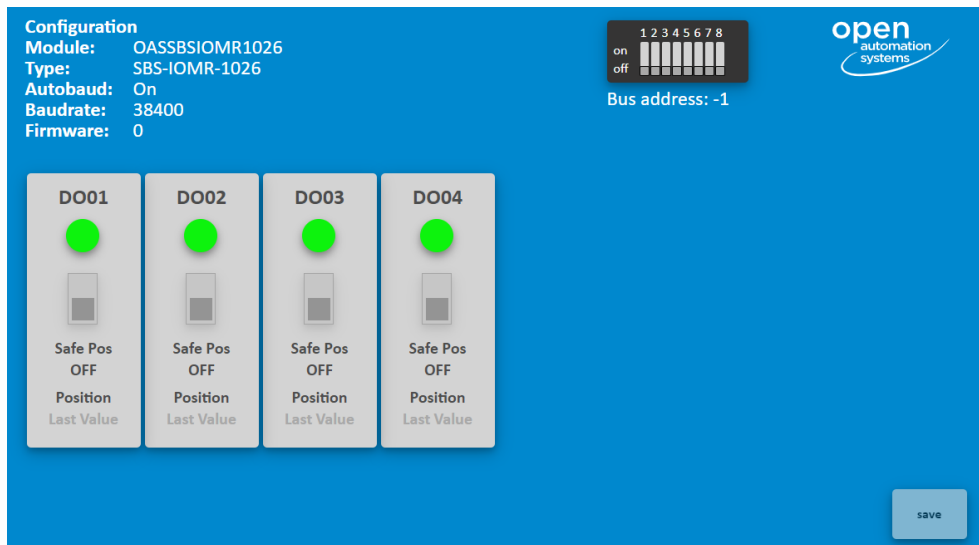


Figure 54: OAS-SBS-IOMR-1026 Module Config View

LED color

The color of each point can be set by clicking on LED circle. The following colors are available:

- red
- green
- yellow
- off/no color

Safe Position Status

You can set the safe position status by clicking on the entry below **Safe Pos**.

The switches do not display the actual values of the module.

Safe Position Value

The safe position value can only be set if the safe position status is set to **ON**. If the safe position status is set to **OFF**, the safe position value will be greyed out and set to **Last Value**.

7.8.2 Module Status View

The Module Status View allows you to set the Auto Cmd and display the feedback value. Furthermore, the switch shows the status of the switch on site (if the switch is up, the OAS Modbus module is set to manual).

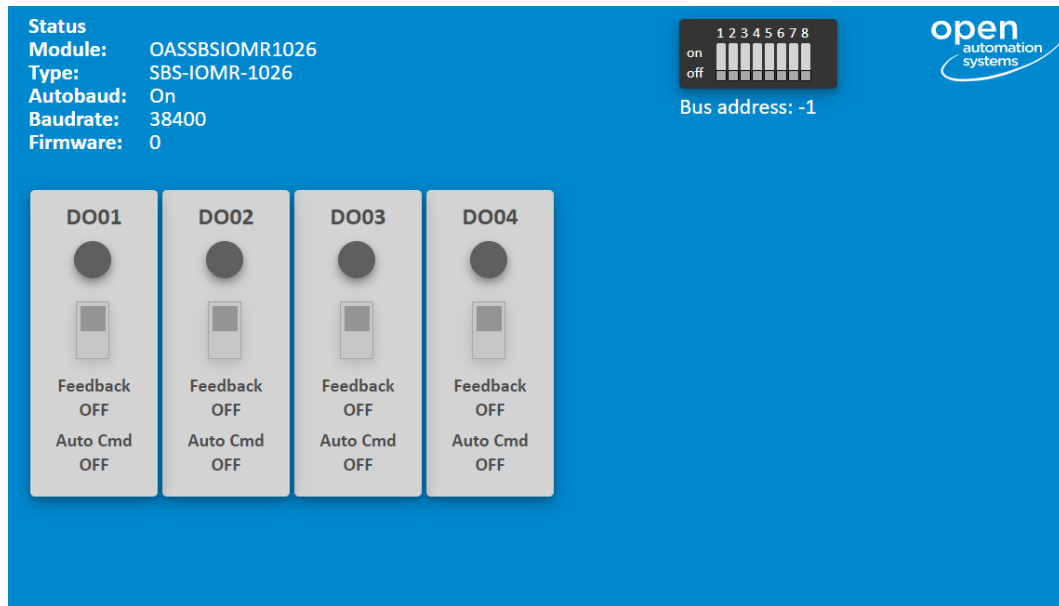


Figure 55: OAS-SBS-IOMR-1026 Module Status View

7.8.3 Niagara Workbench Interface

The Niagara Workbench Interface is only accessible by an admin-user. It enables an admin-user to perform fine-tuning on the OAS Modbus module and connect the modules with the control logic running on the Niagara station.

⚙ Configuration (Async4 Do Configuration)

Status	20
Active Module Type	NONE
Set Point Module Type	SBS_IOMR_1026
Active Autobauding	Off
Set Point Autobauding	On
Active Baudrate	38400
Set Point Baudrate	38400
Active Timeout	0.00 {disabled,fault,stale}
Set Point Timeout	300.00 s {ok} ⌵
Display Address	-1.00 {ok}
Display Firmware	0.00 {disabled,fault,stale}
Check Interval	+000000h 05m 00s ⌵
Min Write Time	000000h 05m 00s ⌵ [1second-1hour]
Max Write Time	000000h 00m 01s ⌵ [1second-1hour]
Active On Side Switch Status	0.00 {disabled,fault,stale}
Active On Side Switch Value	0.00 {disabled,fault,stale} @ def
Active Led Red Value	0.00 {disabled,fault,stale} @ def
Set Point Led Red Value	0.00 {ok} ⌵
Active Led Green Value	0.00 {disabled,fault,stale} @ def
Set Point Led Green Value	255.00 {ok} ⌵
Active Save Position Status	0.00 {disabled,fault,stale} @ def
Set Point Save Position Status	0.00 {ok} ⌵
Active Save Position Value	0.00 {disabled,fault,stale} @ def
Set Point Save Position Value	15.00 {ok} ⌵
Feedback Value	0.00 {disabled,fault,stale} @ def
Automatic Cmd	0.00 {ok} ⌵
▶ Do01	Do Point
▶ Do02	Do Point
▶ Do03	Do Point
▶ Do04	Do Point

Figure 56: OAS-SBS-IOMR-1026 AxProperty Sheet View

CoV reduction

The purpose of the CoV Reduce routine is to prevent the Modbus from being slowed down by too many CoV telegrams.

For this purpose, two time-bound processes are established to check whether:

1. no value has been written for too long (Min Write Time)
2. too many values are written in a short time (Max Write Time)

Min Write Time

To ensure that values are updated after a certain time even if there are no CoV events on the module, a timer is implemented to write the current value after a defined time.

This timer only comes into effect if within the "Min Write Time" no CoV event occurs and the configured "Min Write Time" has elapsed. If these criteria are met, a write action is executed, the current time is stored, and the timer is restarted.

The default time for "Min Write Time" is 5 minutes.

Max Write Time

To prevent too many CoVs being sent over the bus, the time of the CoV event is stored. If the time difference from the last event is less than the "Max Write Time", no write action will be performed.

If the limit of the configured "Max Write Time" is exceeded, the "Max Write Time" timer is stopped. The write action is executed, the execution time is saved, and the "Max Write Time" timer is restarted.

The default time for "Max Write Time" is 1 second.

Wiresheet

The figure below shows the wiresheet view of the digital output point of an OAS-SBS-IOMR-1026 module.

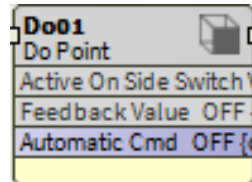


Figure 57: OAS-SBS-IOMR-1026 Do Point

Active On Side Switch

This slot shows the current position of the manual switch on the physical OAS Modbus module.

Feedback Value

This slot displays the binary feedback value on the OAS Modbus module. Feedback Value always reports the actual output value, regardless of whether the module is set to Hand, Off or Auto.

Automatic Cmd

This slot is used for setting the output value of the output point. This slot is for the value of the automatic switching command.

7.9 OAS-SBS-IOMR-1031

The OAS-SBS-IOMR-1031 module has four digital inputs and four digital outputs. It is used to control four 1-stage drives or similar and to connect and signal up to four messages, e.g. operating, fault or messages such as frost, filter, or fan belt as well as status messages. The inputs can also be used as counters. For further information, see the data sheet.



Figure 58: OAS-SBS-IOMR-1031 physical Modul

Operational LEDs

Power	Description
Green	Modul has power

Bus	Description
Red	No/faulty communication
Green	Flashes with communication transfer with the master

Status 1	Description
Green	OK, flashes at regular intervals
Yellow	Flashes if the actual module configuration differs to workbench/web interface settings

Status 2	Description
Red	On when at least one output is not in the position Auto
Off	All outputs are in the position Auto

7.9.1 Module Config View

The following figure shows the web interface of the OAS-SBS-IOMR-1031 module, that a web-user can access. Here he can inspect basic information about the module and change the characteristics. To save the configuration click on the **save** button in the lower right corner.

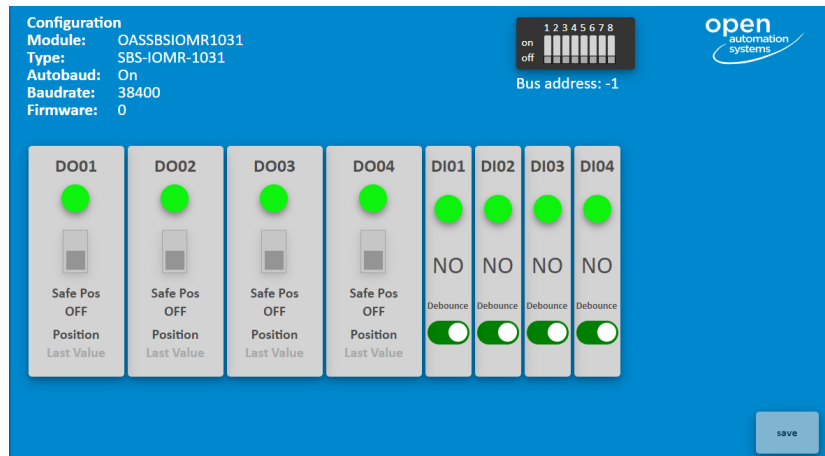


Figure 59: OAS-SBS-IOMR-1031 Module Config View

LED color

The color of each point can be set by clicking on LED circle. The following colors are available:

- red
- green
- yellow
- off/no color

Switch Logic

The settings for the switch logic determine if an input is normally closed or normally open (inverted)

Bounce protection

This setting determines if the recognition of a change of the input signal is to be delayed.

The delay time is set to 100ms.

Safe Position Status

You can set the safe position status by clicking on the entry below **Safe Pos**.

The switches do not display the actual values of the module.

Safe Position Value

The safe position value can only be set if the safe position status is set to **ON**. If the safe position status is set to **OFF**, the safe position value will be greyed out and set to **Last Value**.

7.9.2 Module Status View

You can use the Module Status View to set the AutoCmd for the DO points. The status of the manual switch and the feedback value are also displayed for the DO points. The respective status and the currently displayed LED color can be displayed for the DI points.

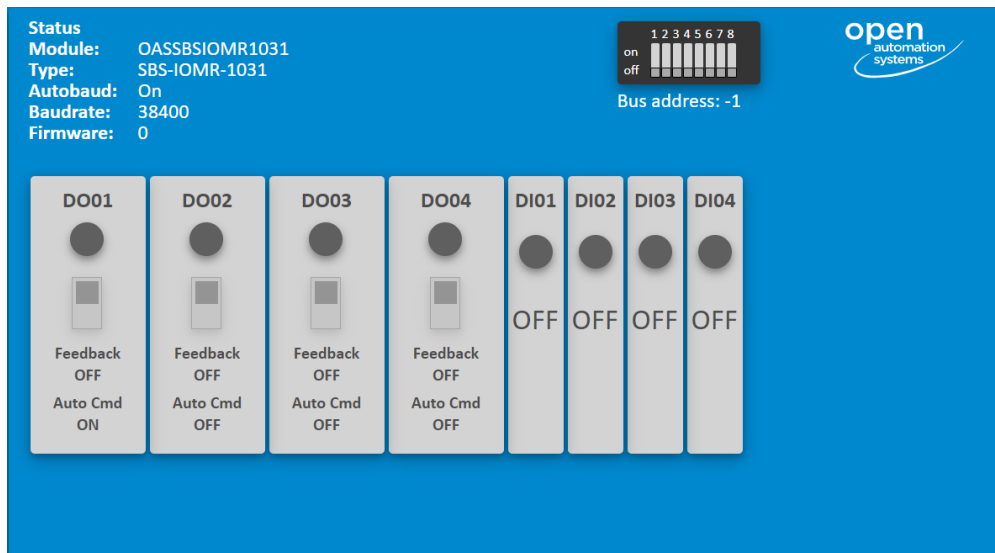


Figure 60: OAS-SBS-IOMR-1031 Module Status View

7.9.3 Niagara Workbench Interface

The Niagara Workbench Interface is only accessible by an admin-user. It enables an admin-user to perform fine-tuning on the OAS Modbus module and connect the modules with the control logic running on the Niagara station.

Configuration (Async Mixed Digital Configuration)	
Status	0
Active Module Type	NONE
Set Point Module Type	SBS_IOMR_1031
Active Autobauding	On
Set Point Autobauding	On
Active Baudrate	38400
Set Point Baudrate	38400
Active Timeout	0.00 {ok}
Set Point Timeout	300.00 s {ok}
Display Address	0.00 {ok}
Display Firmware	0.00 {ok}
Check Interval	+00000h 05m 00s
Min Write Time	00000h 05m 00s [1 second - 1 hour]
Max Write Time	00000h 00m 01s [1 second - 1 hour]
Active On Side Switch Status	0.00 {ok}
Active On Side Switch Value	0.00 {ok}
Active Led Red Value	0.00 {ok}
Set Point Led Red Value	0.00 {ok}
Active Led Green Value	0.00 {ok}
Set Point Led Green Value	0.00 {ok}
Active Save Position Status	0.00 {ok}
Set Point Save Position Status	0.00 {ok}
Active Save Position Value	0.00 {ok}
Set Point Save Position Value	0.00 {ok}
Feedback Value	0.00 {ok}
Automatic Cmd	0.00 {ok}
Active Switch Logic Value	0.00 {ok}
Set Point Switch Logic Value	0.00 {ok}
Active Bounce Protection Value	0.00 {ok}
Set Point Bounce Protection Value	0.00 {ok}
Input	0.00 {ok}
Do01	Do Point
Do02	Do Point
Do03	Do Point

Figure 61: OAS-SBS-IOMR-1031 AxProperty Sheet View

CoV reduction

The purpose of the CoV Reduce routine is to prevent the Modbus from being slowed down by too many CoV telegrams.

For this purpose, two time-bound processes are established to check whether:

1. no value has been written for too long (Min Write Time)
2. too many values are written in a short time (Max Write Time)

Min Write Time

To ensure that values are updated after a certain time even if there are no CoV events on the module, a timer is implemented to write the current value after a defined time.

This timer only comes into effect if within the "Min Write Time" no CoV event occurs and the configured "Min Write Time" has elapsed. If these criteria are met, a write action is executed, the current time is stored, and the timer is restarted.

The default time for "Min Write Time" is 5 minutes.

Max Write Time

To prevent too many CoVs being sent over the bus, the time of the CoV event is stored. If the time difference from the last event is less than the "Max Write Time", no write action will be performed.

If the limit of the configured "Max Write Time" is exceeded, the "Max Write Time" timer is stopped. The write action is executed, the execution time is saved, and the "Max Write Time" timer is restarted.

The default time for "Max Write Time" is 1 second.

Wiresheet DO

The figure below shows the wiresheet view of the digital output point of an OAS-SBS-IOMR-1031 module.

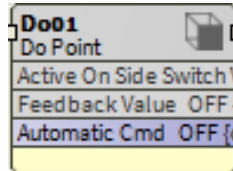


Figure 62: OAS-SBS-IOMR-1031 Do Point

Active On Side Switch

This slot shows the current position of the manual switch on the physical OAS Modbus module.

Feedback Value

This slot displays the binary feedback value on the module. Feedback Value always reports the actual output value, regardless of whether the module is set to Hand, Off or Auto.

Automatic Cmd

This slot is used for setting the output value of the output point. This slot is for the value of the automatic switching command.

Wiresheet DI

The figure below shows the wiresheet view of the digital input point of an OAS-SBS-IOMR-1031 module.

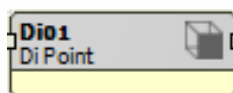


Figure 63: OAS-SBS-IOMR-1031 Di Point

7.9.3.1 Counter feature

If the digital inputs of the OAS Modbus module should be used as counters the following steps must be performed:

1. Drag a **CounterXX** component from **register/DICounter** folder of the **OASModbusUtilitiesAsync** palette and drop it onto **Points/Points** folder of the Niagara device, as shown in the following figure.

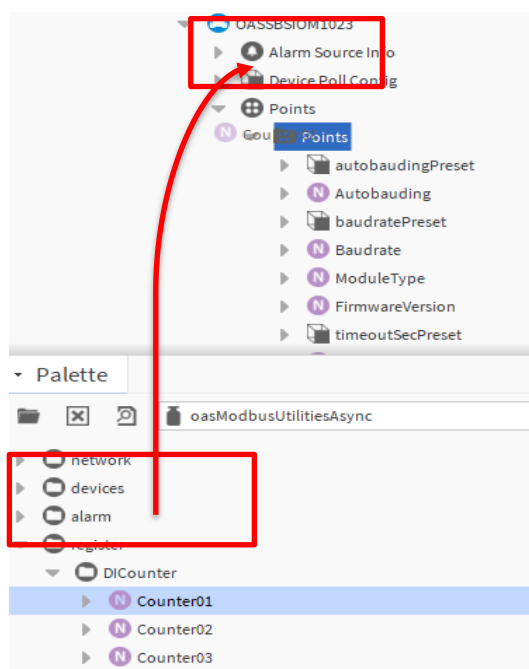


Figure 64: OAS-SBS-IOM-1031 Setting up a counter

2. Go to the wiresheet of the **Points/Points** folder and link the out-slot of **CounterXX** to the component of your choice to get the counters value.

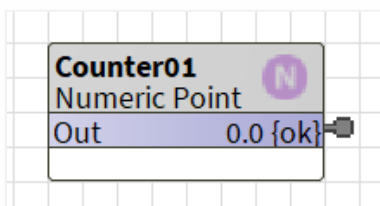


Figure 65: OAS-SBS-IOM-1031 Counterpoint

Note: Each of the CounterXX components is bound to a certain preset register of the OAS Modbus module.



Each connection of a counter component consumes one additional data point (license global capacity).

8 Device Configuration Table for the OAS Modbus-Modules

The OASModbusUtilitiesAsync license is limited to a total of 16 IO modules per network.

The individual IO modules (devices) consume the following Niagara data points, which affects the size of the base license.

Data Points OAS-SBS-IOM-1021	21
Data Points OAS-SBS-IOMR-1022	24
Data Points OAS-SBS-IOM-1023	11
Data Points OAS-SBS-IOMR-1024	12
Data Points OAS-SBS-IOMR-1025	30
Data Points OAS-SBS-IOMR-1026	12
Data Points OAS-SBS-IOMR-1031	19

Table 6: Datapoint consumption

To determine the required license size, it is recommended to create a table according to the following example.

Fall	IOM-1021	IOMR-1022	IOM-1023	IOMR-1024	IOMR-1025	IOMR-1026	IOMR-1031	DPs	Geräte
1	2	1	2	1	0	0	0	100	6
2	2	0	2	3	0	0	0	100	7
3	1	1	5	0	0	0	0	100	7
4	1	0	5	2	0	0	0	100	8
5	0	0	8	1	0	0	0	100	9
6	3	1	0	1	0	0	0	99	5
7	3	0	0	3	0	0	0	99	6
8	2	1	3	0	0	0	0	99	6
9	2	0	3	2	0	0	0	99	7
10	1	0	6	1	0	0	0	99	8
11	3	1	1	0	0	0	0	98	5
12	3	0	1	2	0	0	0	98	6
13	2	0	4	1	0	0	0	98	7
14	1	0	7	0	0	0	0	98	8
15	3	0	2	1	0	0	0	97	6
16	2	0	5	0	0	0	0	97	7
17	0	0	6	0	1	0	0	96	7

Fall	IOM-1021	IOMR-1022	IOM-1023	IOMR-1024	IOMR-1025	IOMR-1026	IOMR-1031	DPs	Geräte
18	2	1	0	0	1	0	0	96	4
19	2	0	0	2	1	0	0	96	5
20	4	0	0	1	0	0	0	96	5
21	3	0	3	0	0	0	0	96	6
22	0	4	0	0	0	0	0	96	4
23	0	3	0	2	0	0	0	96	5
23	0	2	0	4	0	0	0	96	6
24	0	1	0	6	0	0	0	96	7
25	0	0	0	8	0	0	0	96	8
26	2	0	1	1	1	0	0	95	5
27	4	0	1	0	0	0	0	95	5
28	0	3	1	1	0	0	0	95	5
29	0	2	1	3	0	0	0	95	6
30	0	1	1	5	0	0	0	95	7
31	0	0	1	7	0	0	0	95	8
32	0	0	0	0	1	2	2	92	5

Table 7: Device Configuration Table

9 Order Information

Article / Type	Description
OAS-MODBUS-UTILS-16	OAS I/O WEB Module-Configurator for a maximum of 16 Modules per Network

Table 8: Order Information

IoT Solutions and Services for Smart Automation

Individual solutions for intelligent buildings / smart building solutions - we offer you everything you need for this. From the automation and control technology of your lighting and facade control to the automation of the heating, ventilation and air conditioning system, we offer you both individual components and standardized and proven SBS complete solutions.



powered by
niagara
framework®

TRIDIUM authorised distributor



OAS Open AutomationSystems GmbH

Am Forst 26
74889 Sinsheim
Germany

Tel.: +49 7265 / 49 96 522
Fax: +49 7265 / 49 96 523
Mail: sales@oa-systems.de
www.openautomationsystems.store



Any unauthorized use or copying of the contents or any part thereof is prohibited. This applies in particular to trademarks, model denominations, part numbers, and drawings. Subject to changes.

© 2022 OAS Open AutomationSystems GmbH. All rights reserved.