



Operating Guide

AutroSafe OPC Server



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1. Introduction

1.1 About this book

This document describes how to operate the AutoSafe OPC Server, which possibilities it provides and also how to detect and investigate faults. The information in this document is intended for AutoSafe users supervising an AutoSafe system by using an AutoSafe OPC Server.

1.2 Product overview

The AutoSafe OPC Server is providing a standard OPC interface for the AutoSafe Interactive Fire Detection System. OPC (OLE for Process Control) is a software standard used by Windows based applications to access data from process control systems. The basic principle of OPC is that OPC client applications communicate with an OPC server via a standardized, open and therefore vendor independent interface.

Below you can find a schematic picture of an AutoSafe Interactive Fire Detection System including usage of an AutoSafe OPC Server for access and control of the safety system:

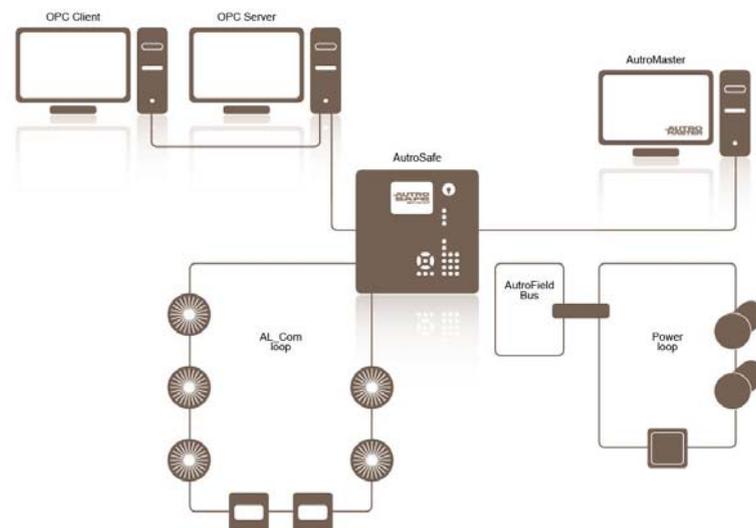


Figure 1 AutoSafe OPC Server Overview

The AutoSafe OPC Server provides a standard and vendor independent interface for supervision, access and control of detectors (Smoke- Gas- Heat- and Flame detectors) and other field units connected to an AutoSafe Interactive Fire Detection System.

1.2.1 Product scope

The AutoSafe OPC Server software enables data exchange between Windows applications and units connected to an AutoSafe Interactive Fire Detection System. The OPC Server can be used by any OPC client application with support for the Data Access Custom Interface standard. The OPC interface can be used to integrate process control systems from vendors like ABB, Honeywell and Siemens. It can also be used by simple OPC Clients such as Matrikon OPC Explorer.

1.2.2 Functionality overview

The AutoSafe OPC Server is connected to the AutoSafe safety network via an AutoSafe Panel. The communication between the OPC Server and the fire and detection system is handled via the AutoCom interface available through the AutoSafe Panel.

During startup of the OPC Server the specified configuration file is compared and matched towards the actual configuration running in the AutoSafe Panel. Without a match of configurations, the OPC Server reports an OPC Failed status and stops.

After a successful startup of the AutoSafe OPC server the OPC browse interface provides a system structure that reflects the AutoSafe system. Via the browse interface both read, read/write and write OPC items will be accessible. Some of the items are static while others are dynamic and present the status of the AutoSafe system. All OPC items are accessible from a third party OPC client.

The static read OPC items are properties of an object instance that do not change during runtime. Examples of static object attributes are Name, Description and Type.

The dynamic read OPC items are used for supervising the status of the system and the attached units in the AutoSafe system. Examples of dynamic object attributes are Smoke, Temperature, Fault, Alarm, Disabled, etc.

The writable OPC items are used for controlling the AutoSafe system. Examples of writable items are Reset, Disable, SetTime, etc.

For more information about the AutoSafe OPC Server functionality, see [AutoSafe OPC functionality](#).

1.2.3 Product release history

The table below shows the Release history of the AutoSafe OPC Server:

Product/Option	Ordering No	Actual Revision	Release date
AutoSafe OPC Server		1.0-0	2009-06-15

Table 1 Product release history

1.3 Related documentation

Document	Identity
AutoSafe Installation and Configuration Guide	P-116-ASAFE-OPC-INST/DGB
AutoCom 3.11 Protocol Specification	Version revision 3.11

Table 2 Related documentation

1.4 Terminology

Term	Description
COM	Component Object Model, a specification that defines how individual software components can interact and share data under Windows. Developed by Microsoft.
DCOM	Distributed COM. Extends COM to networks
OLE	Object Linking and Embedding. A technology, based on COM, developed by Microsoft
OPC	OLE for Process Control
PC	An abbreviation for both personal computer and process controller

Table 3 Terminology

2. AutroSafe OPC functionality

2.1 Introduction

This section highlights some important considerations regarding functionality, capacity and performance which will be of importance to know about before you start to use the AutroSafe OPC Server.

2.2 General OPC principles

There are a number of terms that need to be understood before you can utilize an OPC server in the best possible way. An OPC client sets up so called OPC Groups of OPCItems. Each OPC group provides a list of OPC items (each item normally corresponds to an Object attribute).

The OPC server builds up a memory cache for each OPC group. When the OPC client subscribes asynchronously it sends a request and is then interrupted (callback) each time data arrives. If you combine asynchronous reading with a cyclic subscription interval you will get all the OPC items from the OPC server at the first request but afterwards you will only receive data when they are changed.

Asynchronous subscription with a cyclic subscription interval towards the cache (typically one second) is the recommended subscription for most applications. With such a subscription the data is never older than 1 second and you minimize the data flow between the OPC client and the OPC server to the changed data (once the first set of data is transferred). As most attributes do not change at all during the subscription, the load on the PC where the OPC server and OPC clients reside is minimized.

2.3 AutroSafe OPC principles

The main parts of the AutroSafe OPC items that can be subscribed via an OPC client are automatically cached in the OPC Server during the OPC Server startup. During runtime the OPC server will react on event messages delivered via the AutroSafe Panel and update the corresponding OPC items in the OPC cache accordingly.

The default state of the AutroSafe system is handled as good (normal) by the AutroSafe OPC Server until a status event from the AutroSafe system indicates a change of state. Below you can find a schematic picture of the startup and runtime behavior:

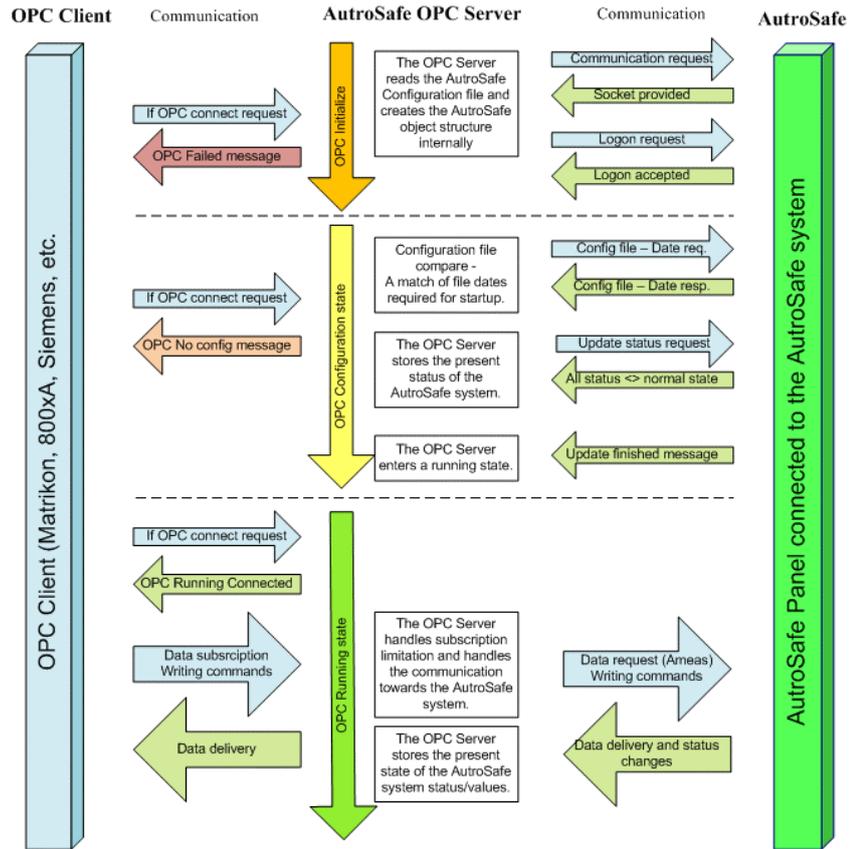


Figure 2 Startup and Runtime behavior

The AutoSafe OPC Server itself does not have limitations regarding subscription performance; the AutoSafe system however has limited bandwidth resources and as follows also limited possibilities to handle multiple subscriptions at a high subscription rate.

This limitation only regards subscriptions on the dynamic attributes like Temp and Aneas values which need to be specifically requested from the AutoSafe system to be updated on the OPC Server side. Static attributes and dynamic attributes related to status are handled in another way by AutoSafe and will therefore not cause the same load on the AutoSafe network.

For more information about the request and subscription behavior implemented in the OPC Server, please see the following chapters.

2.3.1 Static OPC Items

All static OPC items, like Name, Description and Type, are read from the AutoSafe Configuration file during the OPC Server startup. The values of the static OPC items are cached in the OPC Server during startup and will not be updated until a restart of the OPC Server is made. As follows, OPC Client subscription towards static OPC items will not affect the performance of the AutoSafe system during runtime operations.

2.3.2 Dynamic OPC Items related to status

The dynamic attributes that are related to the status of the system are handled via event driven messages from the AutoSafe system. Although these attributes are dynamic they will only be updated in the OPC Server when a corresponding event message is transferred on the AutoSafe network. Below you can see a schematic picture of the status subscription functionality:

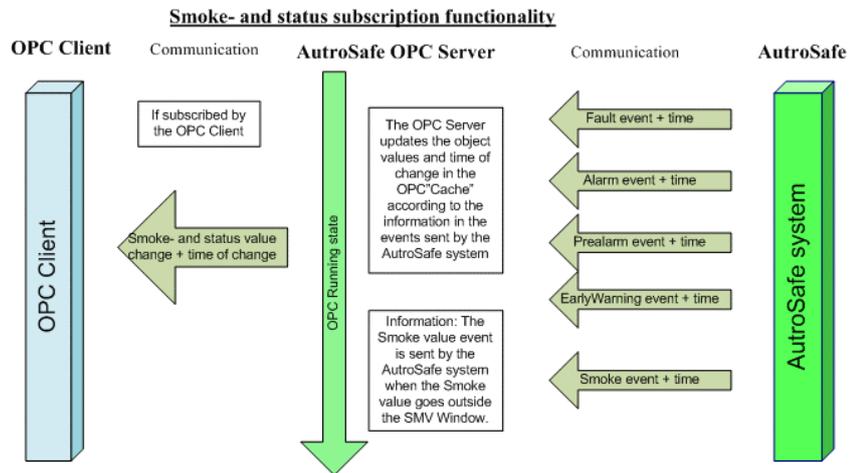


Figure 3 Dynamic status subscriptions

As for the static attributes, OPC client subscriptions of this type will not affect the performance of the AutoSafe system.

2.3.3 Temperature subscriptions

The AutoSafe preconditions related to temperature values are that dedicated request messages must be sent out on the AutoSafe network to get an update on the actual temperature. This kind of request/respond activity from one or several OPC clients could easily overload the AutoSafe network.

To limit the bandwidth consumption and secure the alarm status update on the AutoSafe system, a rule of maximum one temperature request per detector loop every fourth second has been setup. This rule has been setup to avoid that too much request and subscription load can be forced on the AutoSafe system.

The OPC Server handles and secures this limitation by not allowing the OPC client to request for temperature values themselves. Instead the OPC Server controls all request messages sent towards the AutoSafe system. The temperature request messages, which are sent automatically, from the AutoSafe OPC Server will start immediately after startup and will continue until the OPC Server is stopped. The request rate is set to one request per loop every fourth second. See picture below:

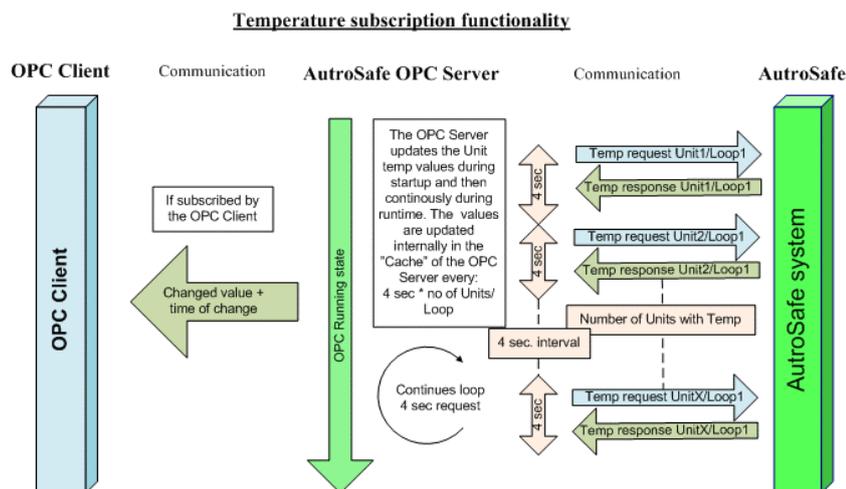


Figure 4 Temperature subscription functionality

The temperature functionality within the AutoSafe OPC Server secures the bandwidth resources on the AutoSafe network and still makes it possible to subscribe on temperature values via an OPC Client with a “reasonable” update rate of the temperature values.

The update rate of temperature values is depending on the amount of detectors that holds temperature values within each “unit loop” on the AutoSafe network. The update rate can be calculated by the formula: 4 seconds multiplied with the number of AutoSafe detectors on the same loop. AutoSafe units including temperature values are the Multi sensor-, Heat-, Ionization- and Optical detectors.

2.3.4 Ameas subscriptions

The number of subscription requests on Ameas values connected to Gas detectors can, like temperature requests, cause a heavy network load on the AutoSafe system. When requesting for Ameas values the addressed detector will send Ameas values on a cyclic basis over the AutoSafe network until a stop request is sent from the subscriber.

To not interfere with even more important functions, like alarm or disturbance events, the number of simultaneous Ameas requests on the AutoSafe network has been limited to five. The OPC Server handles this by holding track of the number of active Ameas request setup by the connected OPC clients.

To be able to notify the AutoSafe operators, the number of active Ameas requests is presented via the NoOfAmeas OPC item on the Top Operation Zone object. If the number of Ameas requests exceeds five, the OPC Server will not allow any more requests to be sent out to the AutoSafe system. In this case a request overflow flag is set; also available as an OPC item is on the TOZ object.

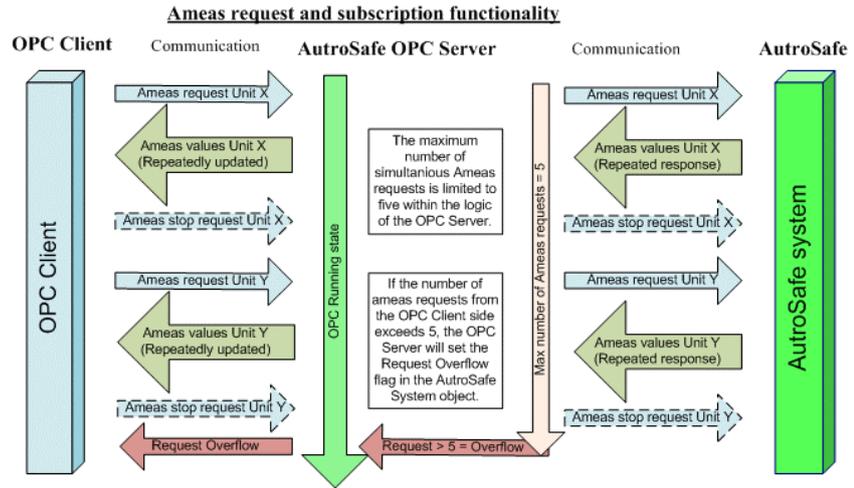


Figure 5 Ameas subscription functionality

2.3.5 OPC Commands

To interact with the AutoSafe system via an OPC Client, a number of writable OPC items are implemented. These OPC items make it possible for the AutoSafe operator to for example reset the system, disable/enable units, request ameas values etc.

A summary of the possible commands towards the AutoSafe system can be seen in the picture below:

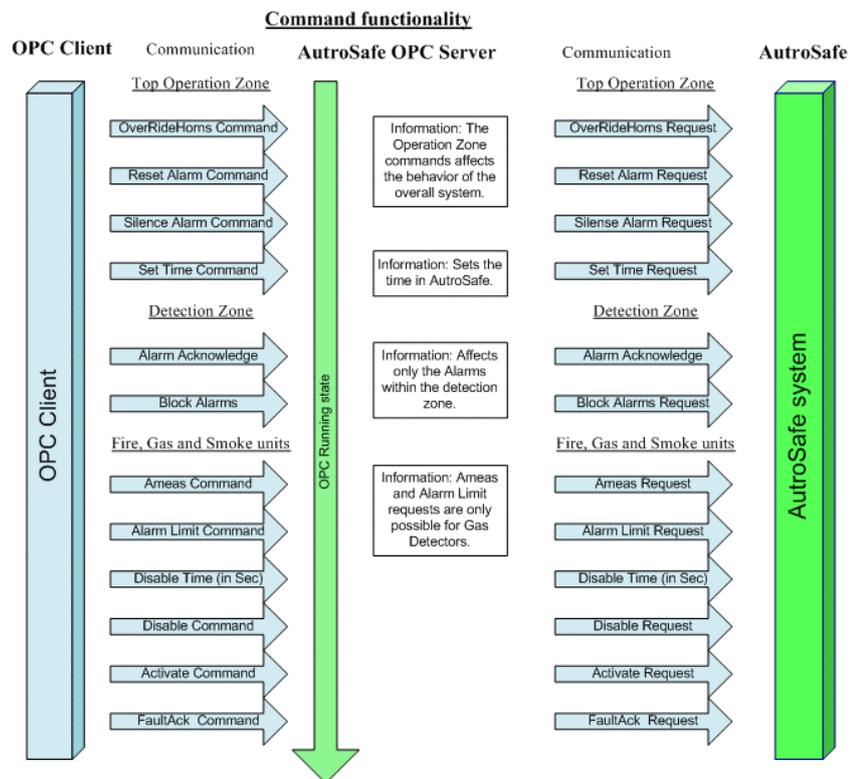


Figure 6 Commands

2.4 Log functionality

The startup and runtime information generated by the AutoSafe OPC Server is available in Windows Event Viewer and in application log files specifically created for the AutoSafe OPC Server.

2.4.1 Event Viewer

All application information of importance for an operator or administrator of the AutoSafe OPC Server is available in the Windows Event Viewer. Startup information as well as runtime exceptions can be confirmed respective investigated in the event viewer log. For more information about the Event Viewer information see, [Fault handling and user repair](#).

The Windows Event Viewer can be found in Start->Control Panel->Administrative tools->Event Viewer. All events are collected in the AutoSafe OPC Server log entry category.

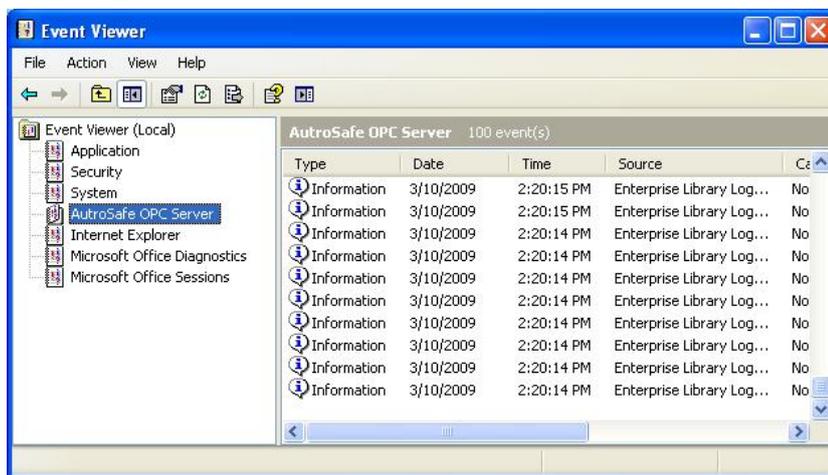


Figure 7 Event Viewer

2.4.2 Log files

The log files connected to the AutoSafe OPC Server are separated into two different category types:

- Operator log – Including startup information and specific error application messages generated during runtime operation. The information in the operator log is very similar to the information in the Windows Event Viewer.
- General log – Including errors or information not handled by the Operator log.

The location of the log files is decided during the configuration phase of the OPC server. A recommendation is that the “log path” is specified to a disk that can handle large files. For more information about the log file information see, [Fault handling and user repair](#).

2.5 Time synchronization

The time synchronization feature in the AutroSafe OPC Server is configurable; either the time synchronization functionality is enabled or disabled.

If the time synchronization is enabled, the AutroSafe system time will be synchronized with the computer time of the PC running the OPC Server. The time is set via a SetTime request, ones each day or/and each time the OPC Server starts.

There is no specific functionality implemented for verification or comparison of time synchronization mismatch during runtime.

2.6 License handling

The AutroSafe OPC Server has a license model that is divided into three different license levels:

- Level 1 - Includes read access to all status information for detectors, output and alarm devices. This level of license will also make it possible to send (write) Silence, Reset and SetTime commands to the AutroSafe system. Within this level you can also Disable/Enable detectors.
- Level 2 – Includes all functionality in level1. Added functionality to level 2 is the possibility to Activate/Deactivate and Enable/Disable outputs and alarm devices via OPC write commands.
- Level 3 – Includes all functionality in level 1 and 2. This level also provide additional information for points, for example AMEAS, Temp, Smoke, Alarm limits and Engineering values.

2.6.1 License handling functionality

The license level determines which Read/Write access an opcitem have. The expected license behavior regarding opcitem functionality can be seen below:

- Writing to a write access opcitem without a valid license will result in an error response. There will also be a log generated in the log file.
- If an opcitem has both Read/Write access rights, the Write access right will be disabled if the applied license level is to low.
- If the opcitem only has Read access rights no information will be displayed in the opcitem.

Please see Appendix A for more information about the different objects and the license level for each opcitem.

3. Operation instructions

3.1 Startup, runtime and shutdown

This section describes how the AutoSafe OPC Server operates during start-up, runtime and shutdown.

3.1.1 Start-up

The AutoSafe OPC Server is implemented as a Windows service and will immediately start when a OPC Client application is requesting for a connect. During startup, the AutoSafe OPC Server reads the configuration settings made in the Configuration wizard. Typically the AutoSafe configuration file, the IP-address to the AutoSafe system, time Synchronization settings, etc.

Besides the internal OPC Server initialization there are also a number of activities in the AutoSafe system that needs to be processed before any valid data can be subscribed for via the OPC Server interface.

The AutoSafe OPC Server will not deliver any valid data until the OPC Server state is running. It can take up to one minute for the OPC Server to reach this state when connecting to a running AutoSafe system. During initialization of the AutoSafe system itself it can take as long as 40 minutes reach the OPC Server running state.

During startup the AutoSafe OPC Server verifies that the configuration file provided during configuration has the same date and timestamp as the configuration executed in the AutoSafe system. If the timestamps differs the OPC Server will have a Failed status and no valid data will be delivered.

3.1.2 Runtime

During runtime, the OPC Server handles all status messages that is transferred on the AutoCom network and stores the latest status in the OPC cache. The AutoSafe OPC Server also handles subscription requests and write requests from connected OPC clients.

3.1.3 Shutdown

During normal operation no shut down of the server shall be necessary. Possible reasons to a shut down or restart of the AutoSafe service could be:

- you have changed the AutoSafe configuration (added units, changed IP-address, etc.) and need to load the OPC Server

with the new settings

- the AutoSafe OPC Server is causing a fault condition or a high CPU or subscription load

To manually shutdown or restart the OPC Server you need to open Windows Services and manually stop the service according to the instructions below:

1. Identify and disconnect all connected OPC clients.
2. Open Windows Services and mark the AutoSafe OPC Server Service, click stop.

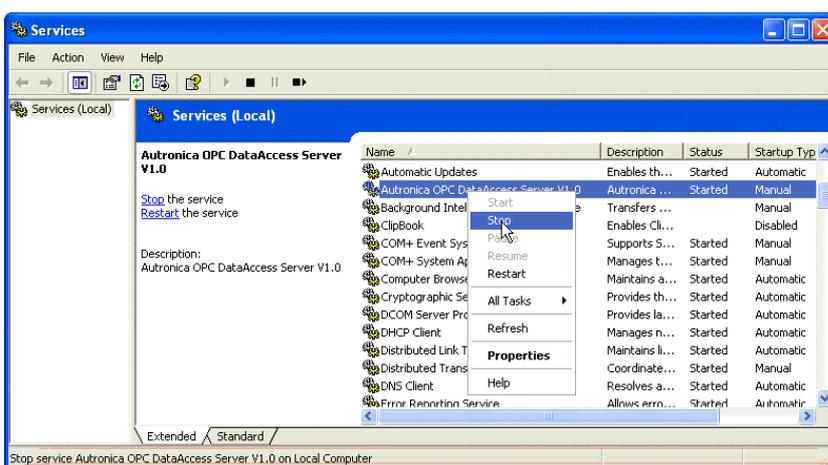


Figure 8 Stop AutoSafe OPC Server

Note that all active OPC subscriptions and requests (Temperature and Ameas) will be stopped by AutoSafe when stopping the AutoSafe OPC Server.

3.2 Operating instructions

As already mentioned, the AutoSafe OPC Server provides the AutoSafe system with a standard OPC Server interface. The supported object types and properties (OPC Items) are accessible via any standard OPC Client. In the chapters below, you can find use cases where a simple OPC client, Matrikon OPC Explorer, is used to:

- connect and view the OPC Server status
- subscribe for data
- send OPC commands

Note that this chapter will not go through every possible subscription, request and command option available. It will only give examples on how the different options can be used. When start using the system you need to know what values to write and how the response from AutoSafe shall be interpreted.

For a better understanding about the OPC item functionality, please see [Appendix A – Supported objects and OPC Items](#) which will give you an explanation of each supported OPC item in the AutoSafe OPC Server.

3.2.1 How to view OPC Server status

The AutoSafe OPC Server can enter three different server states: Running, Failed or Not Configured. You can investigate the present status by connecting an OPC client. Connect by:

1. Start the Matrikon OPC Explorer OPC client. The Client will now present available OPC Servers. Select the **AutoSafe.OPC.DA.1** OPC Server. Click the **“Connect to selected OPC Server”** button.

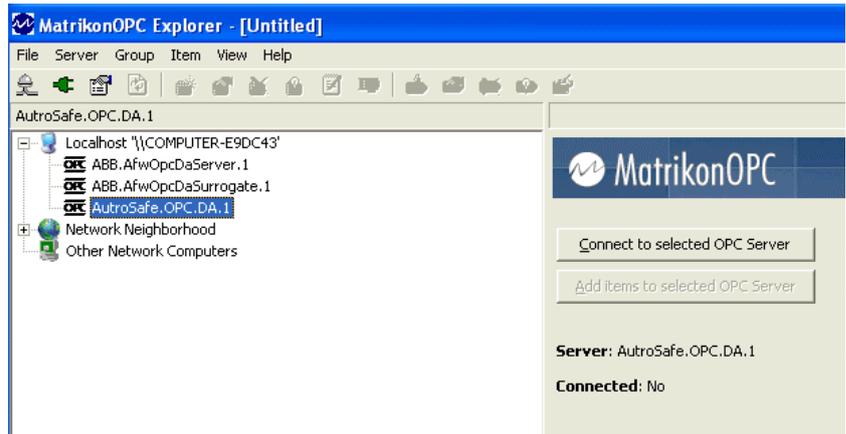


Figure 9 Connect to AutoSafe OPC

2. The client is now connected to the AutoSafe OPC Server. The status indication field in the client presents the reported OPC Server status.

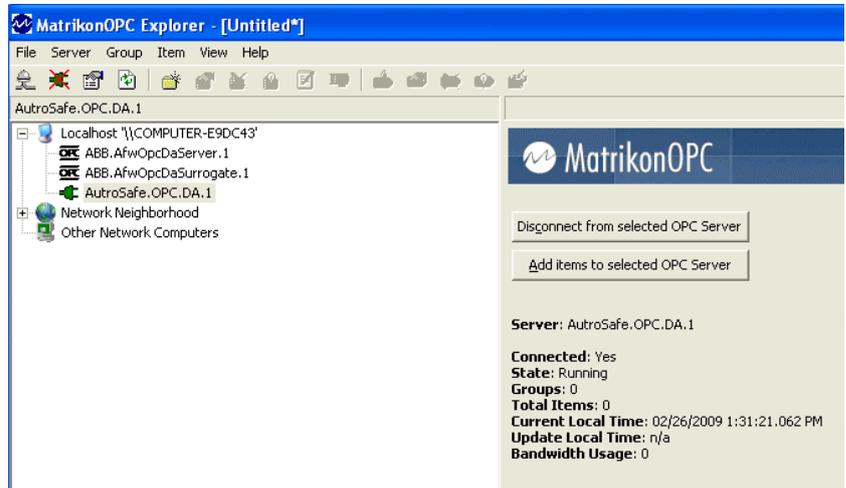


Figure 10 OPC Status information

3.2.2 How to subscribe for OPC data

When the OPC client is connected and indicates a running OPC Server state you can start subscribing for AutoSafe data. As a first action you shall create an OPC Group where you can add your required data. Via the OPC Group you can decide what type of subscription you intend to use. Asynchronous, synchronous, subscription rate etc.

Add your group and start subscribing for data according to the steps below:

1. Use the connection made in the previous chapter. Click on the **“Add items to selected OPC Server”** button.

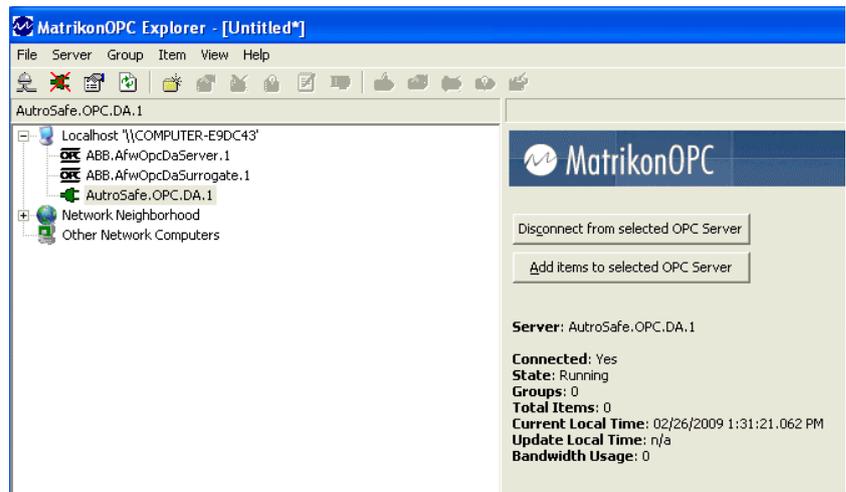


Figure 11 Create an OPC Group

- An OPC Group dialog is now displayed. Name your OPC Group and configure the settings for the group. Click OK.

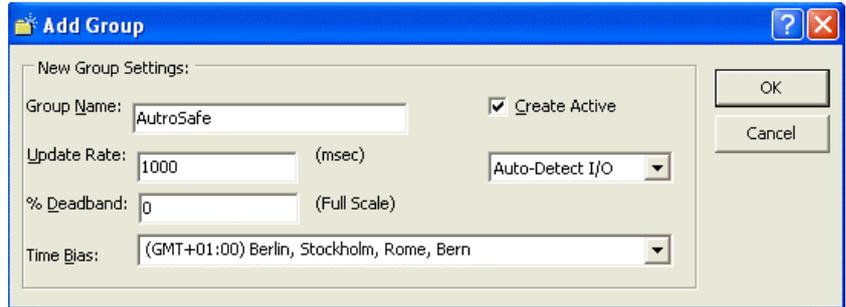


Figure 12 Configure OPC Group

- The OPC Browse window is opened. Browse to the object where you have OPC items that you want to subscribe on.

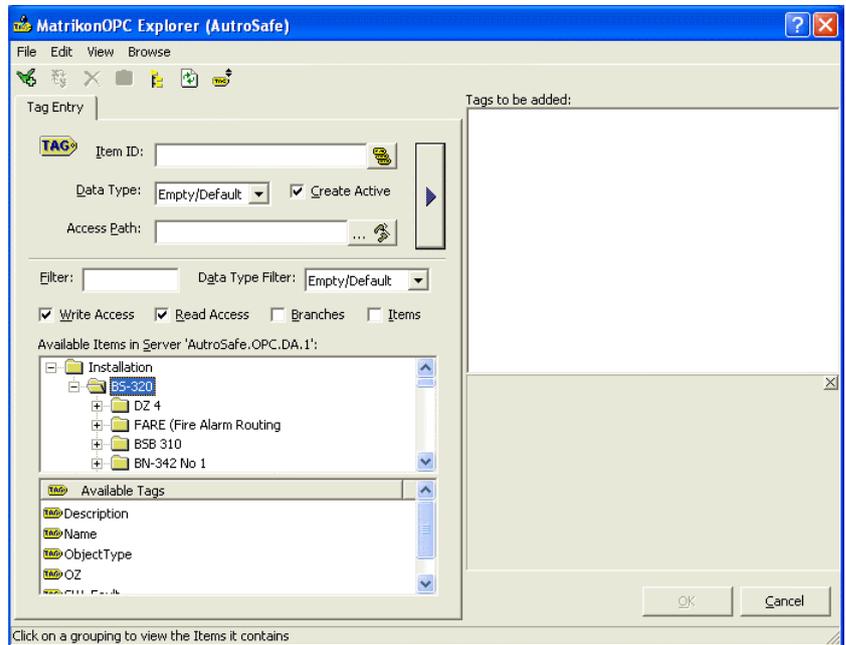


Figure 13 Browse OPC

4. Mark an item or right click somewhere in the bottom left window (Available Tags). Select Add to Tag List or Add All Items to Tag List.

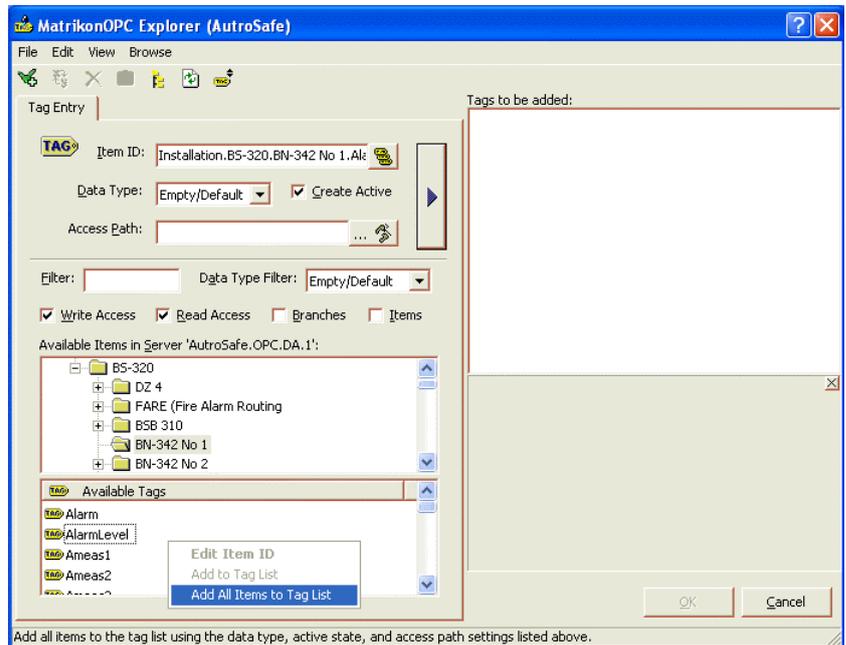


Figure 14 Add to Tag List

5. Your items are now added to the OPC Group. Browse and add more items or return to “Explorer” and the subscription state by clicking on the green “+” icon in the top left corner of the dialog window.

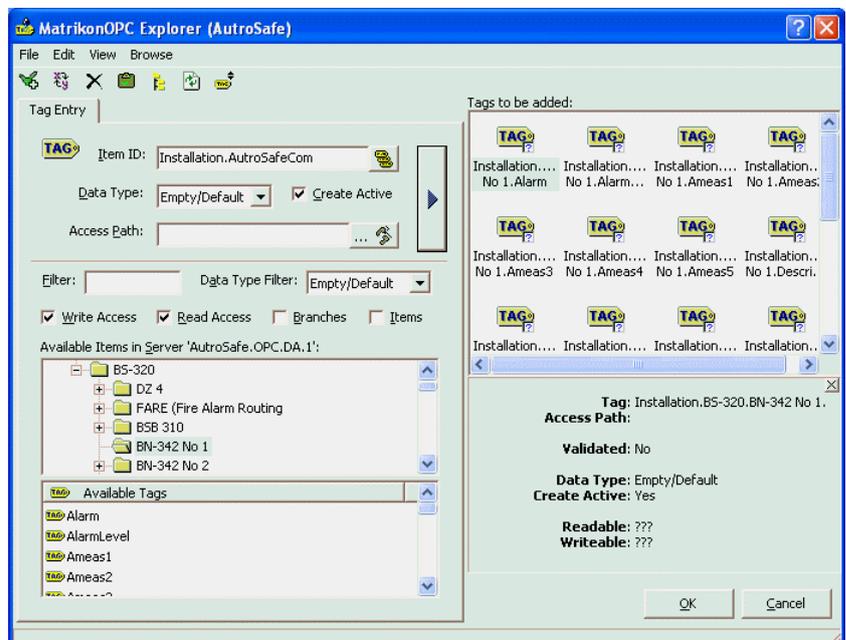


Figure 15 Return to Explorer

6. You have now created an OPC Group which subscribes on live OPC data from the AutoSafe system.

Item ID	Value	Quality	Timestamp	Status
Installation.B5-320.BN-342 No 1.Alarm	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.AlarmLevel	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.Ameas1	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.Ameas2	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.Ameas3	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.Fault	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.Ameas4	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.Ameas5	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.Description		Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.Disable	False	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.DisablementTime		Bad, non-specific	n/a	Active
Installation.B5-320.BN-342 No 1.EarlyWarning	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.EuType	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.EuValue	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.FaultAck		Bad, non-specific	n/a	Active
Installation.B5-320.BN-342 No 1.Inhibit		Bad, non-specific	n/a	Active
Installation.B5-320.BN-342 No 1.Name	BN-342 No 1	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.ObjectType	PT	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.PointCommandType	2	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.PointInfoReqType		Bad, non-specific	n/a	Active
Installation.B5-320.BN-342 No 1.PreAlarm	0	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.SubPointType	GP	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.TimeOfEnable	1/1/1970	Good, non-specific	02/26/2009 12:59...	Active
Installation.B5-320.BN-342 No 1.WarningLevel	0	Good, non-specific	02/26/2009 12:59...	Active

Figure 16 OPC Subscription Group

Column description:

- **ItemID:** Is the identification of the specified Item in the OPC Server. The ItemID is always unique and will reflect how the item is structured within the OPC Server.
- **Value:** Present the actual value of the item. If the item value is not immediately describing the value or the value state, please see [Appendix A – Supported objects and OPC Items](#) for a detailed description.
- **Quality:** Specifies the OPC quality of the value. The quality can be:
 - **Good** – The value is reported as valid from the OPC Server i.e. the connection towards the AutoSafe system is ok and the value can be trusted.
 - **Bad** - The value is reported as bad from the OPC Server and can not be trusted. Reasons could be that the connection towards the AutoSafe system is down or (as in the case above) the value is not readable (only for write purposes).
 - **Uncertain** – The value is uncertain and can not be trusted. Reasons could be that
- **Timestamp:** Indicates when the value last was updated in the OPC cache. Note that the timestamp is residing from the AutoSafe system.
- **Status:** An attribute which indicates whether the subscription of the OPC item is active or not.

3.2.3 How to write OPC commands

This chapter will guide you to perform write operations (OPC commands) towards the AutoSafe OPC Server (AutoSafe system).

The examples are only two of many possible operations that can be performed towards the AutoSafe system. Please see, [Appendix A – Supported objects and OPC Items](#) for more detailed information of each OPC item and what kind of command possibilities there is.

3.2.3.1 Disable Unit

The sequence below will guide you through the steps needed to disable a unit in the AutoSafe system.

Information: All Detection Zones, Alarm Zones and AutoSafe units (Smoke- Gas- Heat- and Flame detectors) have an OPC item (Disable, Read/Write in the OPC Server) which can be used to request the unit to enter a disabled or enabled state. Along with the disable command the AutoSafe OPC Server will also send a disable time frame (DisablementTime, Read/Write in the OPC Server) in minutes. The default DisablementTime frame after an OPC Server startup is 120 minutes.

Follow the steps below to disable a unit for a period of one hour:

1. Use the connection made in the previous chapter.
2. Create a new OPC Group, browse to a unit and add the Disable, DisablementTime and TimeOfEnable.

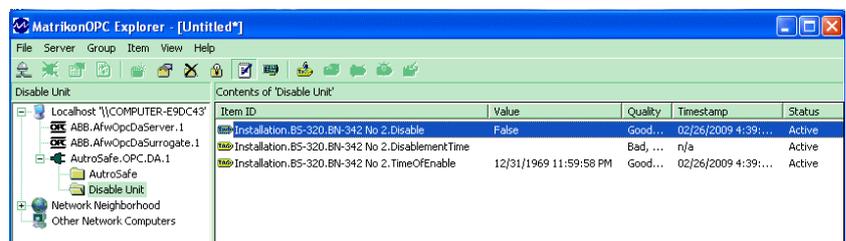


Figure 17 Disable Unit Group

3. First you must set the enablement time to 60 (minutes). Mark the DisablementTime item, right click on it and select Write values.

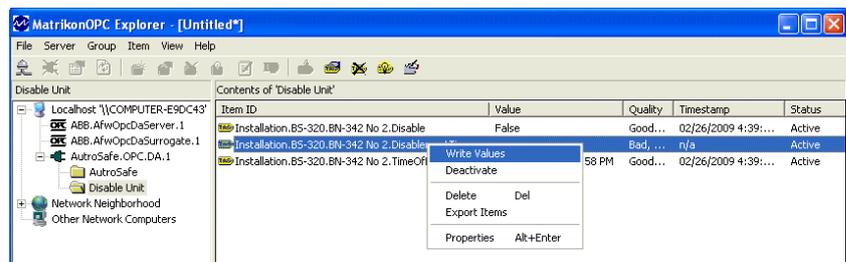


Figure 18 DisablementTime write

4. Write "60" in the New Value column, click OK. When the OK button is clicked the disable time value command will be sent to the AutoSafe OPC Server and the new value will be cached in the OPC Server.

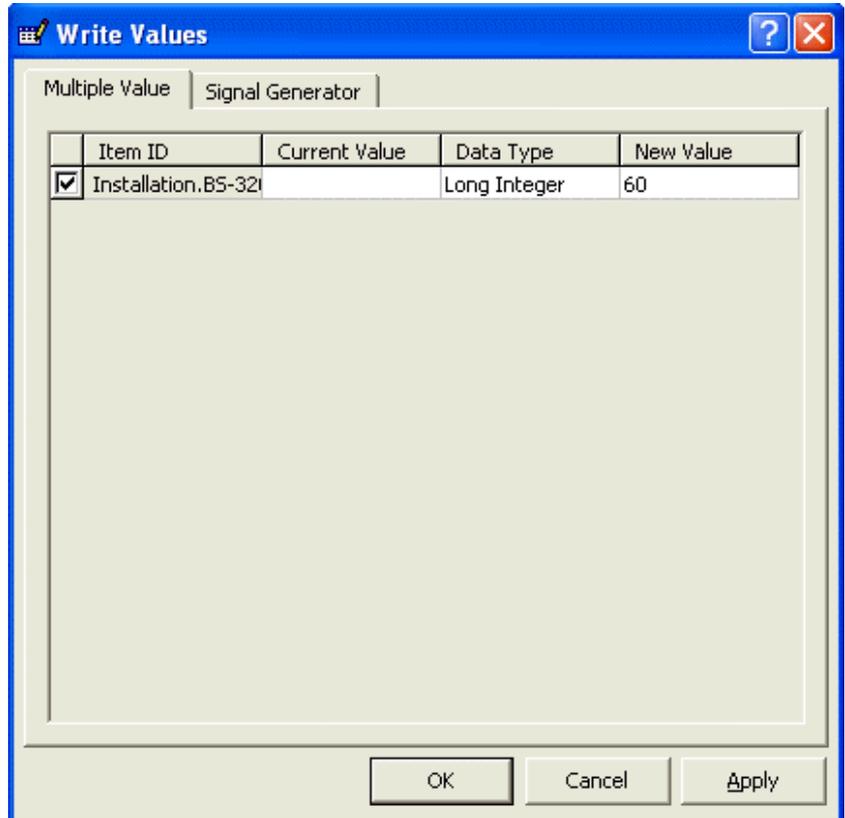


Figure 19 Write 60 seconds

5. Now it is time to disable the unit. Mark the Disable item, right click on it and select Write values.

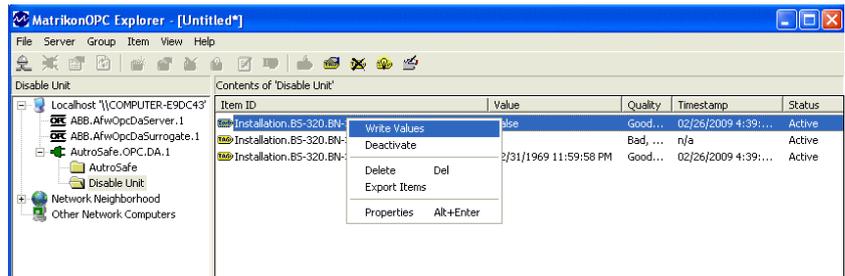


Figure 20 Disable Write

6. Write "True" in the New Value column, click OK. When the OK button is clicked the disable command including the disable time value will be sent to the AutoSafe system.

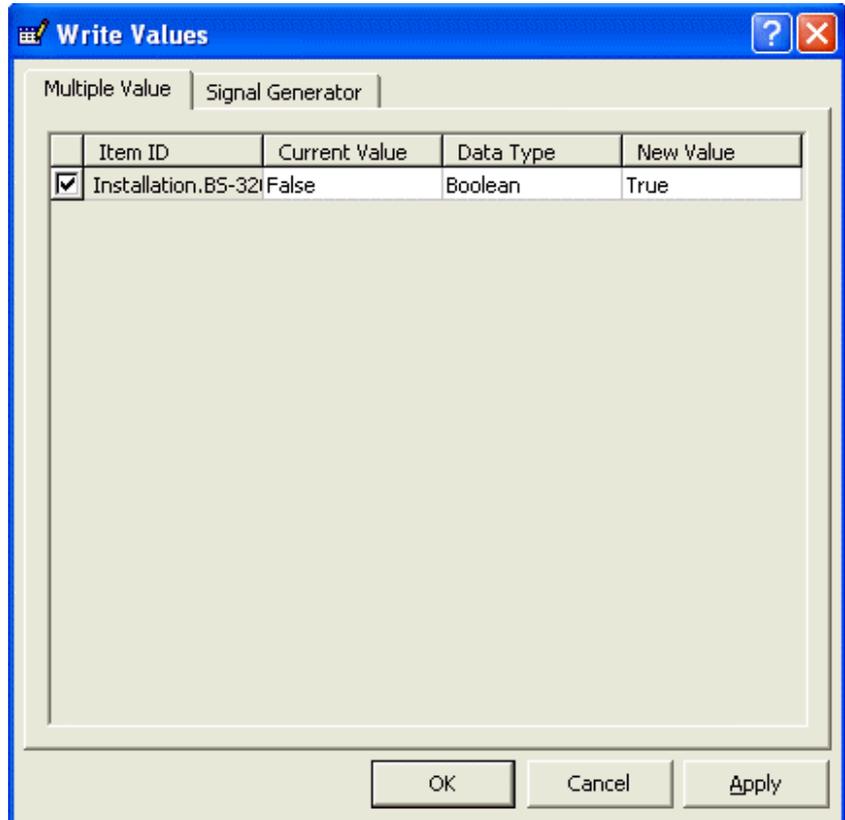


Figure 21 Write "True" to Disable

7. The Disable item value changes to True when the AutoSafe unit responds with a confirmation of the request. Along with the confirmation request the TimeOfEnable value also changes to the time (AutoSafe) when the unit will be "re-enabled"

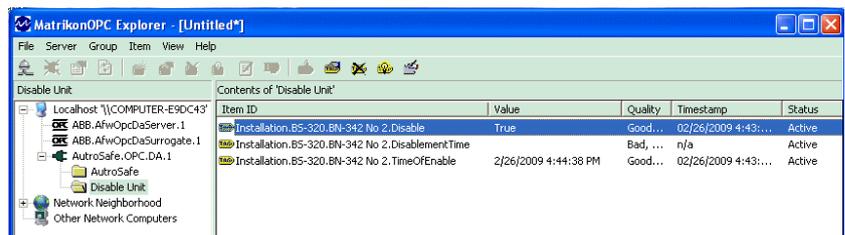


Figure 22 AutoSafe disable response

8. When the 60 minutes disable period has elapsed. The unit will be re-enabled (Disable = False) and the TimeOfEnable will be set to the default time and date. Note that the enable status information always resides from the AutoSafe system itself.

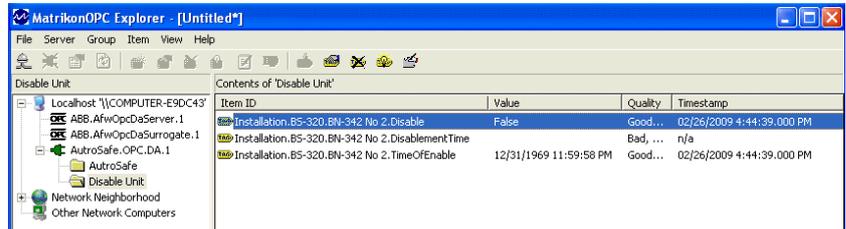


Figure 23 Enable feedback.

3.2.3.2 Request Ameas values

The sequence below will guide you through the steps needed to start an Ameas request towards a Gas detector on the AutoSafe system.

Follow the steps below to enable an Ameas request:

1. Use the connection made in the previous chapter.
2. Create a new OPC Group, browse to a Gas detector unit and add PointCommandType and Ameas1 to Ameas5.

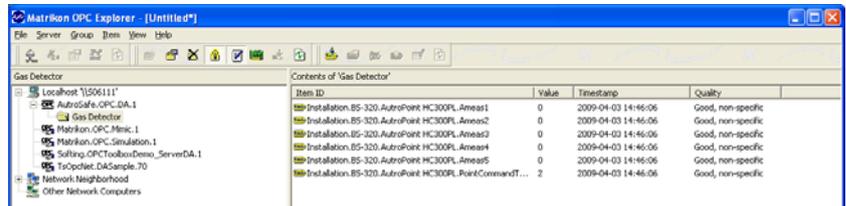


Figure 24 Create new OPC Group

3. Now it is time to start the subscription. Mark the PointCommandType item, right click on it and select Write values.

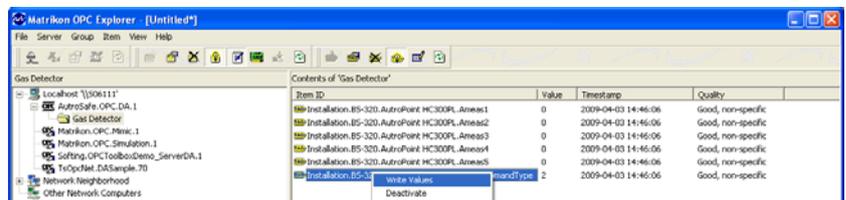


Figure 25 Start Subscription

4. Write "1" in the New Value column, click OK. When the OK button is clicked items Ameas1 to Ameas5 will start receiving values.

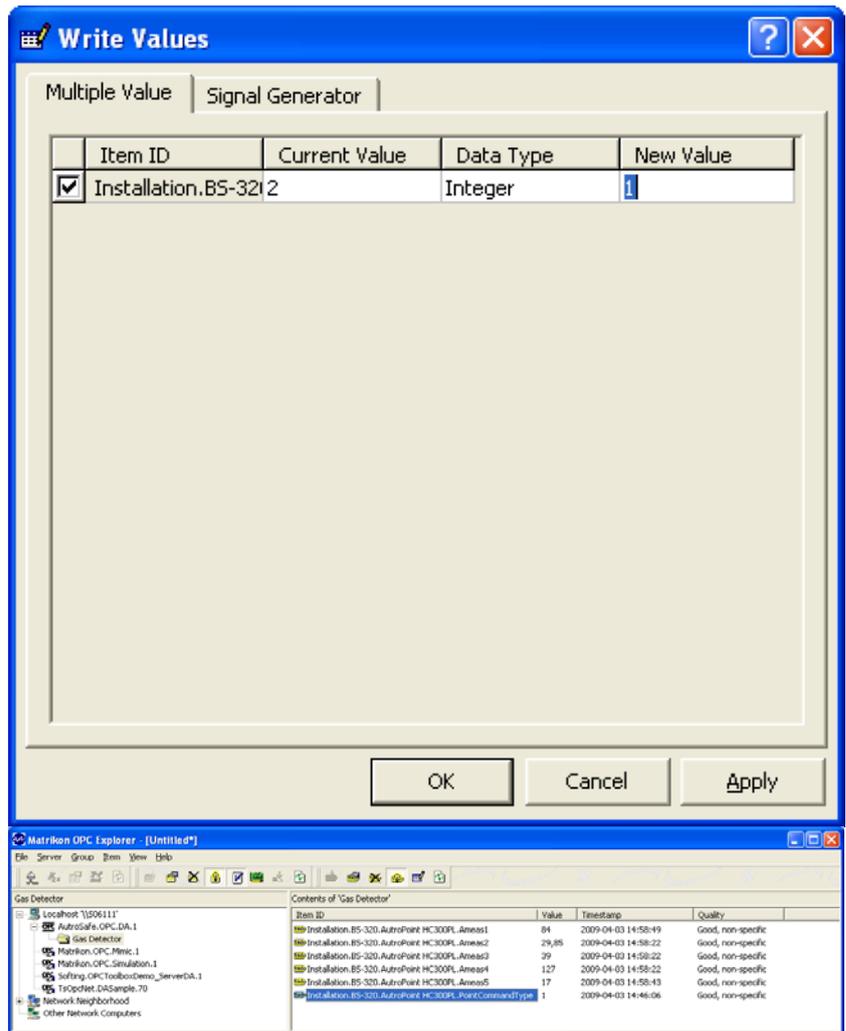


Figure 26 Subscription result

5. To turn off the subscription repeat step 3 and 4 but this time write "2" in the New Value column.

4. Fault handling and user repair

4.1 Log messages

The startup and runtime information generated by the AutoSafe OPC Server is available in Windows Event Viewer and in application log files specifically created for the AutoSafe OPC Server.

4.1.1 Log messages during startup

Using the information in the Event Viewer is a good way to verify that the OPC Server has started without errors and that the communication is up and running. Below you can find a typical startup sequence with information from the Event Viewer.

1. **Startup AutoSafe OPC Server**

The AutoSafe OPC Server is started in the Windows Services. This is the first message generated from the AutoSafe OPC Server and indicates that the OPC Server is ready to start configuring and connecting to the AutoSafe system

2. **Found and configured: 937 OPC Items and 66 AutoSafe objects.**

The AutoSafe OPC Server has read the configuration file and configured found information. The number of found AutoSafe objects (Units) is displayed.

3. **Try to connect to AutoSafe socket on 10.40.46.185 and port 25500**

The AutoSafe OPC Server is ready to connect to the AutoSafe system. The configured IP and port number are displayed.

4. **AutoSafe socket is connected**

The AutoSafe OPC Server has succeeded to connect to the AutoSafe system.

5. **Tries to Login to AutoSafe system**

The AutoSafe OPC Server tries to login the AutoSafe system. If the AutoSafe system is not ready/initialized it will refuse to login. The AutoSafe OPC Server will try to re-login until the AutoSafe system is ready.

6. **AutoSafe Login succeeded**

The AutoSafe OPC Server has succeeded to login to the AutoSafe system. The OPC Server will now request all updated status from the AutoSafe system. The OPC Server will report a NoConfig status.

7. **The AutoSafe OPC Server is configured, synchronized and ready.**

The AutoSafe system has delivered all status information and the AutoSafe OPC Server is synchronized and ready to show correct information. The OPC Server will report a Running status.

4.1.2 Runtime log messages

All errors that are generated by the AutoSafe system will be reported in the application log file and in the Windows Event viewer.

The most common fault messages and how to handle them are reported below.

- **The configuration file for the AutoSafe system does not correspond to the version reported from the system. File version: XXXX, AutoSafe version YYYY**

This fault message can be reported during startup of the AutoSafe OPC Server if the date and time of the configuration file does not correspond to the date and time of the configuration running in the AutoSafe system.

User repair: Verify the match of the configuration files and restart the OPC Server.

- **Found a Unit that is not supported. Name: XXXX**

This message is displayed if the configuration file contains a unit type that is not supported by the AutoSafe OPC Server. The AutoSafe OPC Server will start and display all AutoSafe units that are supported.

Hint: See the Operating Guide for more information about supported AutoSafe units.

- **AutoSafe socket refused to connect! Tries to reconnect**

The AutoSafe OPC Server could not connect to the AutoSafe system socket. Check that the configured IP address and Port number correspond to the AutoSafe system.

Hint: Ping the IP address and verify that it is possible to communicate with the AutoSafe system.

Hint: If a Firewall is installed on the computer check its configuration.

- **Could not find the object with Tagid: XXXXX**

A message has been received from the AutoSafe system that contains a Unit id that is not found in the configuration file. The message will be ignored.

- **An existing connection was forcibly closed by the remote host**

The connection towards the AutoSafe system has been closed.

User repair: Check that all network cables are connected.

Hint: Ping the IP address and verify that it is possible to communicate with the AutoSafe system.

Hint: If a Firewall is installed on the computer, check its configuration.

5. Appendix A – Supported objects and OPC Items

This appendix will specify which objects and OPCItems that are supported within the AutoSafe OPC Server.

5.1 Supported Units/Objects

The AutoSafe OPC Server displays all values collected from the Autronica system as OPCItems. These items are grouped according to the available units in the AutoSafe system.

The AutoSafe OPC Server supports the following units/objects:

- AutoSafe System
- Point
- Detection Zone
- Fire Alarm device
- Fire Protection equipment
- Alarm Zone
- Loop Driver
- Internal Units
- Operation Zone
- Top Operation Zone
- Panel

All objects have a range of predefined OPCItems:

Name. Name of the unit/object collected from the AutoSafe system.

Description. Short description of the unit/object collected from the Autronica system.

Type. Type of unit/object.

- AS = AutoSafe System
- PT = Point
- DZ = Detection Zone
- FD = Fire Alarm device
- FP = Fire Protection equipment
- AZ = Alarm Zone
- LP = Loop Driver
- IU = Internal Units
- OZ = Operation Zone
- OZ1 = Top Operation Zone
- PA = Panel

S_Status. Status of the object. 0 = OK, 1 = Failed, 2 = Warning.

5.1.1 License levels and license handling

The AutoSafe OPC Server provides three different license levels. Level one includes basic OPC functionality, while level two and three adds extended functionality and also extends the access right levels to OPCItems for the OPC user.

Each OPC Item has access rights i.e. Read, ReadWrite or Write.

If the OPC Items has only Read rights and the AutoSafe OPC Server is configured with a lower license level than the default OPC Item license level no value will be displayed when reading the item.

If the OPC Item has ReadWrite rights and the AutoSafe OPC Server is configured with a lower license level than the default OPC item license level the Write rights will be removed, i.e. it will only be possible to Read the OPC Item.

If the OPC Item only has Write rights and the AutoSafe OPC Server is configured with a lower license level than the default OPC item license level each write operation to that OPC Item will be answered with a Failed message. An event log message will also be delivered to the log file.

AutoSafe System

OPCItem	Description	Access Rights	Data type	License level	OPC Value	Range description
LicenseLevel	Indicates the license level of the OPC Server	R	Integer		1	License 1
					2	License 2
					3	License 3
Fileversion	Indicates the version of the configuration file	R	String	1		
sC_Version	Indicates the sC_Version of the configuration file	R	String	1		
ActiveAMEASubscriptions	The number of active subscriptions in the system	R	Integer	3		0 - 5
AMEASubscriptionLimitReached	Indicates that the limit of AMEAS subscriptions Reached	R	Bool	3		True/False

5.1.2 AutoSafe Panel

OPCItem	Description	Access Rights	Data type	License level	OPC Value	Range description
SW_Fault	Indicates the Software status of the Object	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
OZ	Operation Zone id	R	String	1		

5.1.3 Operation Zone

OPCItem	Description	Access Rights	Data type	License level	OPC value	Range description
Fault	Fault indication for the object	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge any Fault on the object	W	Bool	1		True
OverrideHorns	Override the horns	W	Bool	2		True
Reset	Reset the system	W	Bool	1		True
Silence	Silence the horns	W	Bool	1		True

5.1.4 Top Level Operation Zone

OPCItem	Description	Access Rights	Data type	License level	OPC value	Range description
Fault	Fault indication for the object	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge any Fault on the object	W	Bool	1		True
OverrideHorns	Override the horns	W	Bool	2		True
Reset	Reset the system	W	Bool	1		True
Silence	Silence the horns	W	Bool	1		True
SetTime	Sets the time in the AutoSafe system	W	Date Time	1		Example: 09-01-02 13:40:31

5.1.5 Point

Note: All temperatures delivered for the following object types will always show the computer time:

- AutoSense
- Heat Detector
- Ionisation detector
- Manual call point
- Optical detector

OPCItem	Description	Access Rights	Data type	License level	DPC /value	Range description
Alarm	Alarm indication for the object	R	Integer	1	0	OK
					1	Alarm
					2	Test
Disable	Disables or Enable the object	RW	Bool	1		True/False
Disablement Time	How long the object will be disabled, in minutes.	RW	Integer	1		Default: 120 Range: 0-1440
Early Warning	Early warning indication	R	Integer	1	0	OK
					1	EarlyWarn.
					2	Test
Fault	Fault indication	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge object Faults	W	Bool	1		True
Inhibit	Inhibits the object Alarms	RW	Bool	3		True/False
InhibitTime	How long the object will be inhibited, in minutes	RW	Integer	3		Default: 120 Range: 0-1440
PointInfo ReqType	Retrieve Alarm and Warning limits	RW	Integer	3	0	Both limits
					1	Alarm limit
					2	Warning limit
PointCommandType	Requests Ameas values for a specific	RW	Integer	3	1	PRV Subscription = ON

OPCItem	Description	Access Rights	Data type	License level	bPC Value	Range description
	point. Valid for Sub point types (AMEAS) .				2	PRV Subscription = OFF
					12	PMV Subscription = ON
					13	PMV Subscription = ON
PreAlarm	PreAlarm indication for the object	R	Integer	1	0	OK
					1	PreAlarm
					2	Test
TimeOf Enable	Time when the Point will be enabled	R	Time	1		During Enable State 31/12/1969 23:59:59
SubPoint Type	Indicates the subtype of the object	R	String	1		

5.1.5.1 Sub point types (Alarm limits)

Subpoint types that have Alarm limits are:

- Sieger Excel OPGD
- Sieger Excel Duct
- Simrad GD10P IR
- Eclipse Gas Detector

These units have the following additional OPCItems:

OPCItem	Description	Access Rights	Data type	License level	bPC Value	Range description
AlarmLevel	High Alarm limit	RW	Float	3		
WarningLevel	Warning limit	RW	Float	3		

5.1.5.2 Sub point types (EU Type)

Subpoint types that have Engineering value are:

- Sieger Excel OPGD
- Sieger Excel Duct
- General 4-20 mA interface
- Simrad GD10P IR

- Dräger XP TOX
- Eclipse Gas Detector

These units have the following additional OPCItems:

OPCItem	Description	Access Rights	Data type	License level	DPC /value	Range description
EU_Type	Engineering Unit	R	Text	3		
EU_Value	Engineering Value	R	Float	3		

5.1.5.3 Sub point types (AMEAS)

Subpoint types that have AMEAS values are:

- AutoSense (Temp and Smoke)
- Heat Detector (Temp)
- Ionisation detector (Temp and Smoke)
- MultiSensor (Temp and Smoke)
- Optical detector (Temp and Smoke)
- Sieger Excel OPGD
- Sieger Excel Duct
- General 4-20 mA interface
- Simrad GD10P IR
- Dräger XP TOX
- Eclipse Gas Detector

These units have the following additional OPCItems:

OPCItem	Description	Access Rights	Data type	License level	Eclipse	Other
Ameas 1	Analog Measurement value 1	R	Real	3	Gas level	NMV
Ameas 2	Analog Measurement value 2	R	Real	3	Power loop Voltage	Power loop Voltage
Ameas 3	Analog Measurement value 3	R	Real	3	Temp	Temp
Ameas 4	Analog Measurement value 4	R	Real	3	VCC Monitor	VCC Monitor
Ameas 5	Analog Measurement value 5	R	Real	3	4-20 mA	Alarm/Fault status

5.1.6 Fire protection equipment

OPCItem	Description	Access Rights	Data type	License level	DPC Value	Range description
Activate		W	Integer	2	1	Off
					0	On
ActivationState		R	Integer	1	1	Off
					0	On
					2	Pending
Disable	Disable or Enable the object	RW	Bool	2		True/False
Disablement Time	How long the object will be disabled, in minutes.	RW	Integer	2		Default: 120 Range: 0-1440
Equipment State	Indicates the State of the equipment	R	Integer	1	0	Not Activated Off
					1	Not Activated On
					2	Activated Off
					3	Activated On
					4	Not Activated Open
					5	Not Activated In Transition
					6	Not Activated Closed
					7	Activated Open
					8	Activated In Transition
					9	Activated Closed
					16	Unknown
					17	Any State
18	Void					
Fault	Fault indication	R	Integer	1	0	OK

OPCItem	Description	Access Rights	Data type	License level	bPC Value	Range description
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge object Faults	W	Bool	1		True
Operation State	Operation state of the object	R	Integer	1	0	Off
					1	On
					2	Not Initialized
					3	Initializing
TimeOf Enable	Time when the Point will be enabled	R	Time	1		During Enable State 31/12/1969 23:59:59

5.1.7 Detection zone

OPCItem	Description	Access Rights	Data type	License level	OPC Value	Range description
Alarm	Indicates the alarm status of the object.	R	Integer	1	0	OK
					1	Alarm
					2	AlarmAck
Disable	Enable or Disable of the object	RW	Bool	1		True/False
DisablementTime	How long the object will be disabled, in minutes.	RW	Integer	1		Default: 120 Range: 0-1440
DZ_CommandType	Detection Zone commands	W	Integer	1	0	Accept
					1	Block
					2	Prolong Delay
EarlyWarning	Early Warning for the object	R	Integer	1	0	OK
					1	EarlyWarning
					2	AlarmAck
Fault	Indicates Faults for the object	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge Faults on the object	W	Bool	1		
PreAlarm	PreAlarm of the object	R	Integer	1	0	OK
					1	PreAlarmAck
					2	AlarmAck
TestState	Indicates the test state of the object.	R	Integer	1	0	OK
					1	SVD Test
					2	Self Test
					3	Service Test
					4	Zone Test
					5	Point Test

OPCItem	Description	Access Rights	Data type	License level	bPC /value	Range description
TimeOf Enable	Time when the Point will be enabled	R	Time	1		During Enable State 31/12/1969 23:59:59

5.1.8 Alarm Zone

OPCItem	Description	Access Rights	Data type	License level	bPC /value	Range description
Activate	Activate command for the object	W	Integer	2	1	Off
					2	Alert
					3	Bell test
					4	Evacuate
					5	General Alarm
					0	SteadyOn
ActivationState	Indicate the Active state of the object	W	Integer	1	1	Bell Test
					2	Evacuate
					3	General Alarm
					4	Steady On
					5	Off
					0	Alert
Disable	Enable or Disable the object	RW	Bool	2		True/False
DisablementTime	How long the object will be disabled, in minutes.	RW	Integer	2		Default: 120 Range: 0-1440
Fault	Indicates the Fault state of the object	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge object faults	W	Bool	1		True

OPCItem	Description	Access Rights	Data type	License level	DPC /value	Range description
TimeOfEnable	Time when the Point will be enabled	R	Time	2		During Enable State 31/12/1969 23:59:59

5.1.9 Fire Alarm Device

OPCItem	Description	Access Rights	Data type	License level	BPC /value	Range description
Activate	Activate command for the object	W	Integer	2	1	Off
					2	Alert
					3	Bell test
					4	Evacuate
					5	General Alarm
					0	SteadyOn
Disable	Enable or Disable the object	RW	Bool	2		True/False
DisablementTime	How long the object will be disabled, in minutes.	RW	Integer	2		Default: 120 Range: 0-1440
Fault	Indicate Fault on the object	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge of object faults	W	Bool	1		True
OperationState	Operation state of the object	R	Integer	1	5	Off
					0	Alert
					1	Bell test
					2	Evacuate
					3	General Alarm
					4	SteadyOn
					6	FAD Not Initialized
					7	FAD Initializing
					8	FAD Init Failed
9	FAD Timeout On Init					
TimeOfEnable	Time when the Point will be enabled	R	Time	2		During Enable State 31/12/1969 23:59:59

5.1.10 Loop Driver

OPCItem	Description	Access Rights	Data type	License level	DPC /value	Range description
Disable	Enable or Disable the object	RW	Bool	3		True/False
DisablementTime	How long the object will be disabled, in minutes.	RW	Integer	3		Default: 120 Range: 0-1440
Fault	Indicates Fault on the object	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge the Faults of the objects	W	Bool	1		True
TimeOfEnable	Time when the Point will be enabled	R	Time	3		During Enable State 31/12/1969 23:59:59

5.1.11 Internal Units

OPCItem	Description	Access Rights	Data type	License level	DPC /value	Range description
Fault	Indicates Fault on the object	R	Integer	1	0	OK
					1	Fault
					2	FaultAck
					3	OkNotAck
FaultAck	Acknowledge the Faults of the objects	W	Bool	1		True

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