Operating Instructions
Fieldgate FXA520/320 OPC Server
User Manual
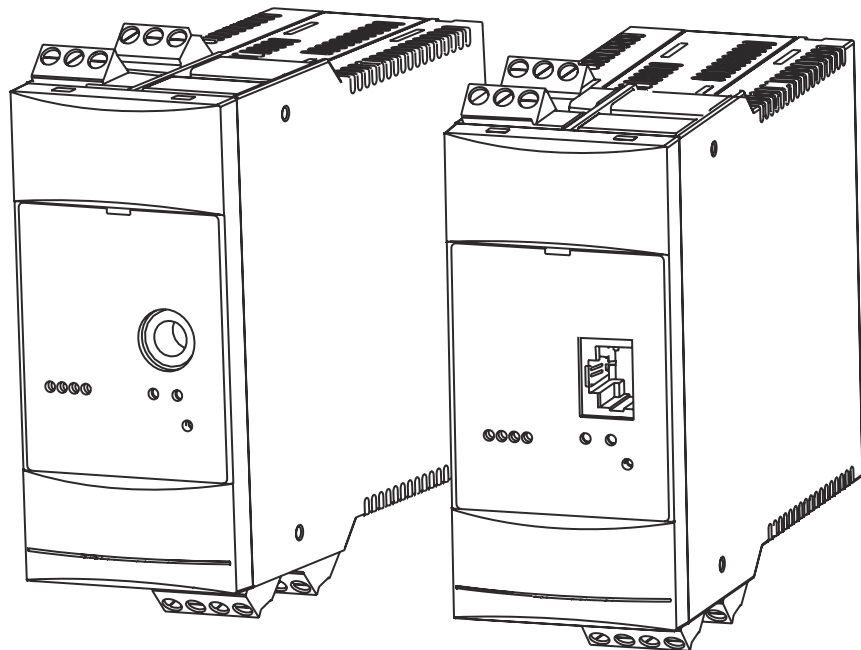

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Table of Contents

1 Document information

1.1 Target audience for this manual

This documents describes installation and user guide for configuration and usage of Fieldgate FXA520/320 OPC DA 3.0 Server.
This guide is for users of Fieldgate FXA520/320 gateway and OPC Servers/Clients. The intended audience includes Project Engineers and System Administrators.

1.2 Version history

Document version	Valid for SW version	Changes to the previous version
BA01304S/00/EN/01.14	01.07.00	Initial version

1.3 Acronyms, Abbreviation and Definition

Abbreviation	Meaning
OPC	OLE for Process Control Open Interoperability standards developed by OPC Foundation
OPC DA 3.0	OPC Data Access specification version 3.0 specification
COM	Component Object Model
DCOM	Distributed Component Object Model

1.4 Document function

1.4.1 Used symbols

Symbols for certain types of information

Symbol	Meaning
A0011193	**Tip** Indicates additional information.

1.5 Documentation

1.5.1 Operating instructions

Document number	Instrument	Type of Document
BA01304S/00	Fieldgate FXA520/320 OPC Server	User Manual

2 Basic safety instructions

2.1 Requirements for the personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:

• Trained, qualified specialists: must have a relevant qualification for this specific function and task
• Are authorized by the plant owner/operator
• Are familiar with federal/national regulations
• Before beginning work, the specialist staff must have read and understood the instructions in the Operating Instructions and supplementary documentation as well as in the certificates (depending on the application)
• Following instructions and basic conditions

The operating personnel must fulfill the following requirements:

• Being instructed and authorized according to the requirements of the task by the facility's owner operator
• Following the instructions in these Operating Instructions

2.2 IT security

We only provide a warranty if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

IT security measures in line with operators' security standards and designed to provide additional protection for the device and device data transfer must be implemented by the operators themselves.

Endress+Hauser can be contacted to provide support in performing this task.

3   Installation

3.1   Required files

FieldgateOPCServer_Installer.msi: This file contains complete installable for Fieldgate FXA520/320 OPC Server application.

3.2   Supported Windows version

- Windows XP (Service Pack 3)
- Windows 7 (32bit/64bit)
- Windows Server 2008

ℹ️ On 64-bit machines OPC Server will be installed and run in 32-bit compatibility mode. i.e. OPC Server will be installed in **C:\Program Files(x86)** or equivalent location.

3.3   Installation

ℹ️ You need to have administrator access right to install the software.

ℹ️ Install Microsoft .NET Framework 4 or higher before installation.

3.3.1   Install Microsoft .NET Framework 4

- Web Installer
  http://www.microsoft.com/en-us/download/details.aspx?id=17851
- Standalone Installer
  http://www.microsoft.com/en-in/download/details.aspx?id=17718

3.3.2   Install Fieldgate FXA520/320 OPC Server

Windows 7

Open Command prompt in Administrator mode as shown in below figure:
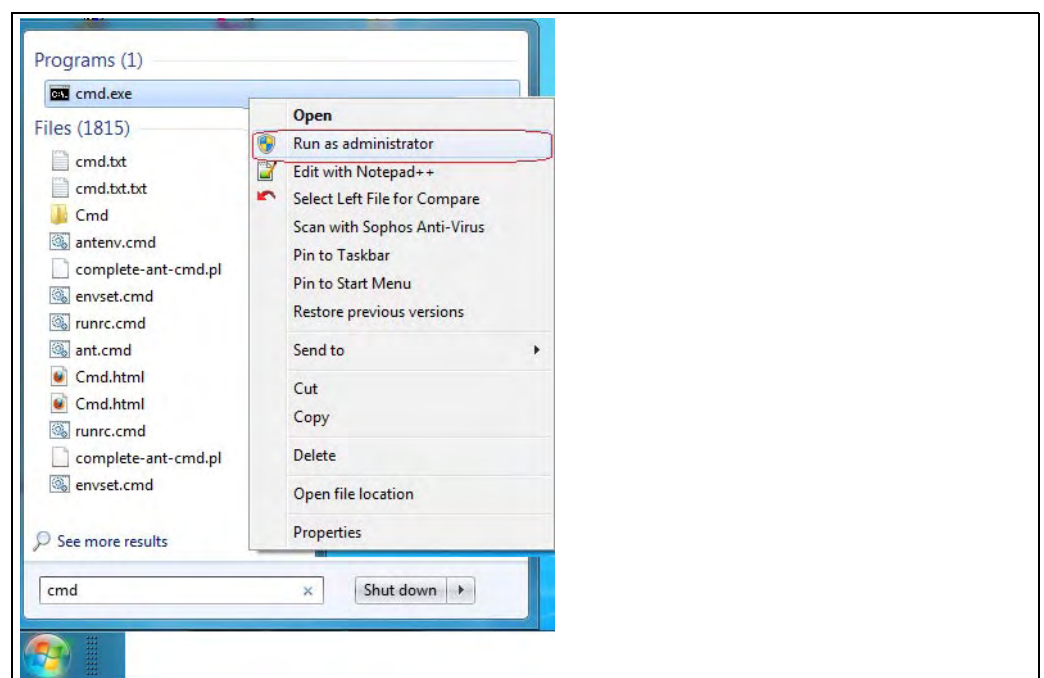
Go to directory where **FieldgateOPCServer_Installer.msi** is located and type **FieldgateOPCServer_Installer.msi**.

Installation

Follow the below instructions to install.
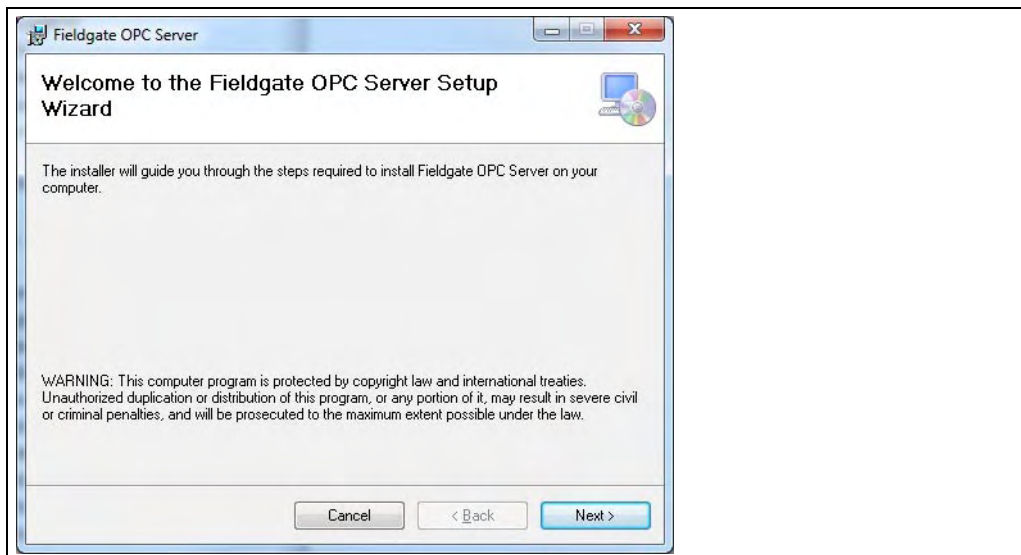
Press **Next** to continue.
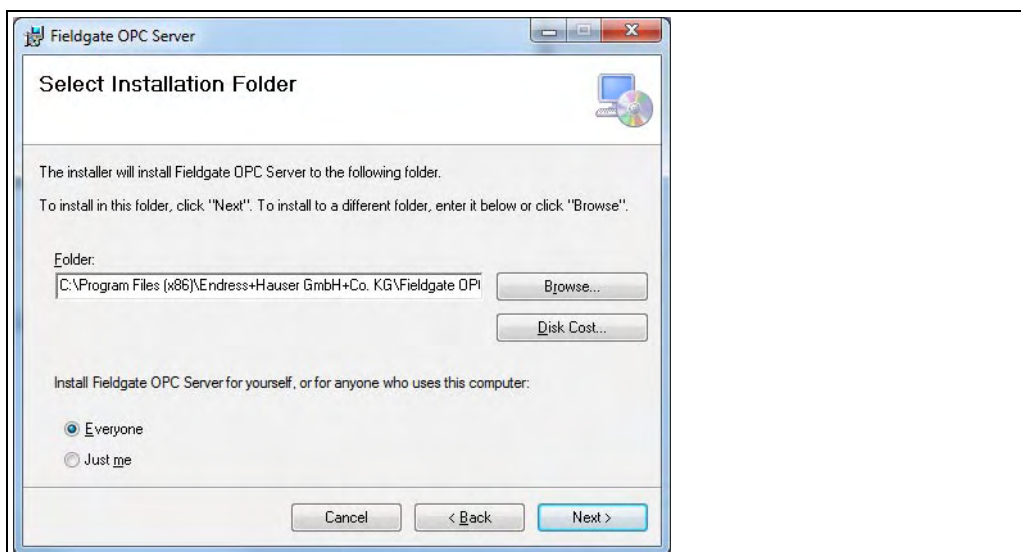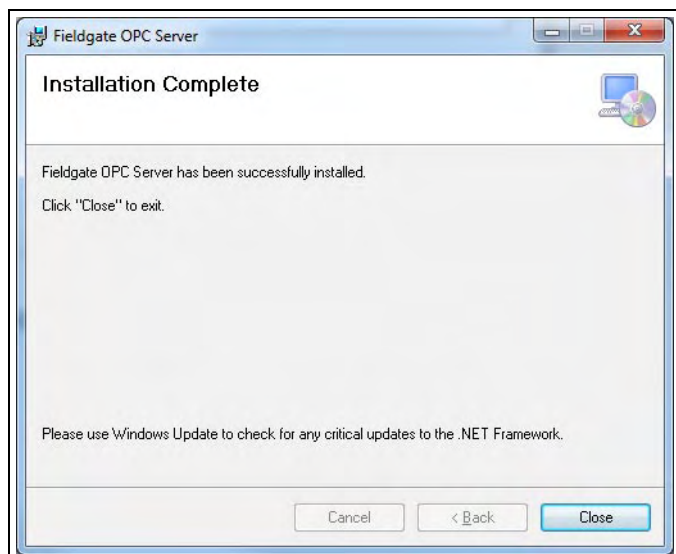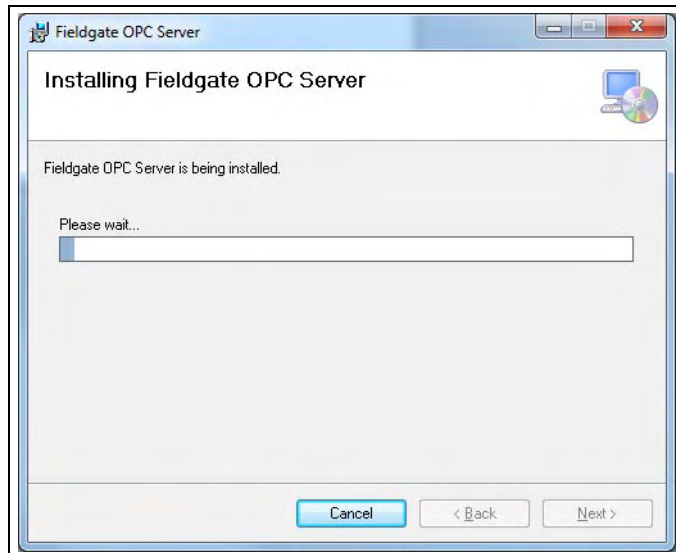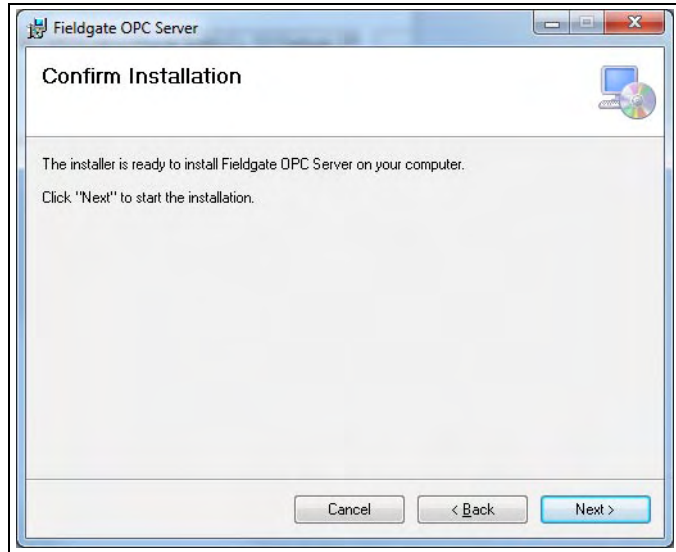
4   Configuration

This section explains some of the basic settings required to configure OPC server.

Windows 7
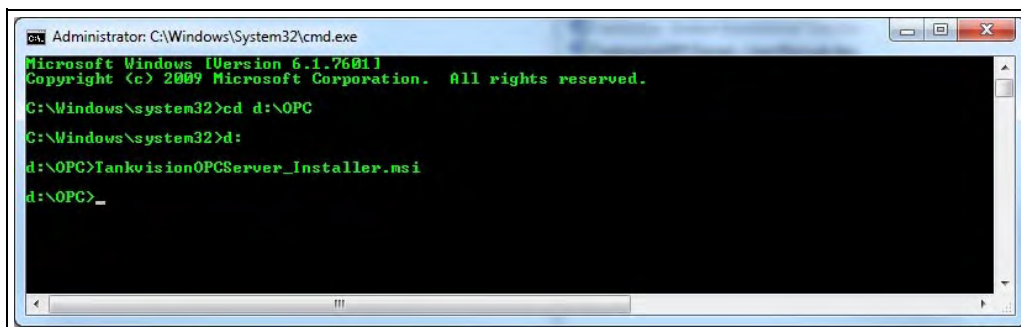Configuration files are stored at **%ALLUSERSPROFILE%\Endress+Hauser GmbH+Co. KG\Fieldgate OPC Server\Version_Number \PluginData** location. and can also be accessed from **Start Menu → All Programs → FieldateOPCServer → Configuration**.
Fieldgate FXA520/320 OPC server contains OPC server configuration file and Logger configuration file.

ℹ️ To change any configuration files, user has to follow below steps to make file writable:

■Right click on any configuration file and select **Properties**. Select **Security** tab and press **Edit** button.
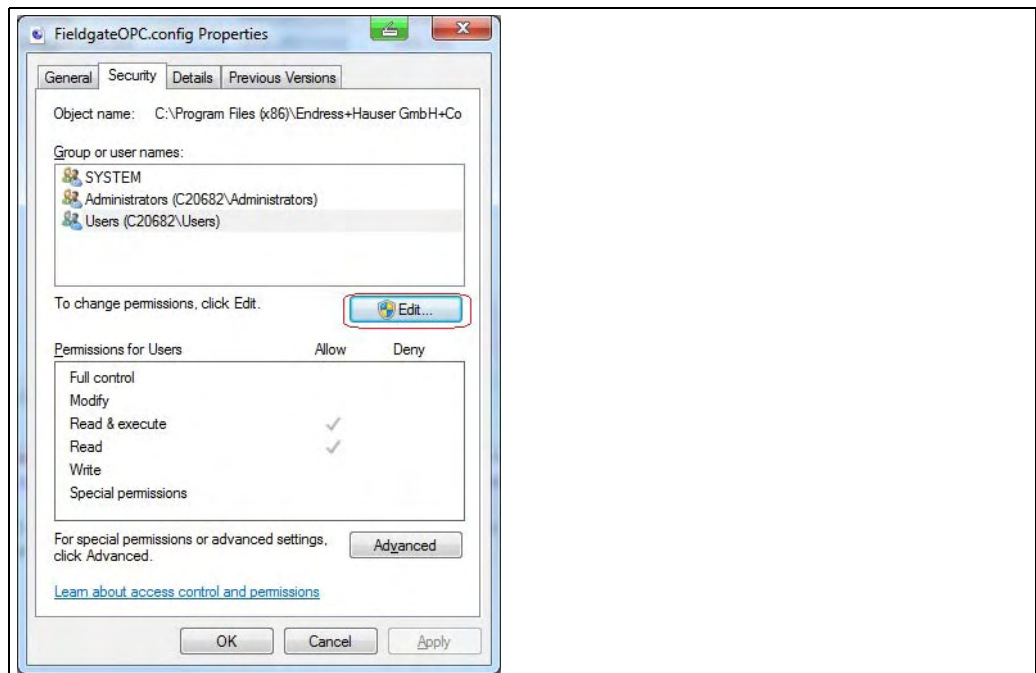
- Select **Users** from **Group or User Names** tab and press select **Full control** from **Permissions for Users** and press **OK**.
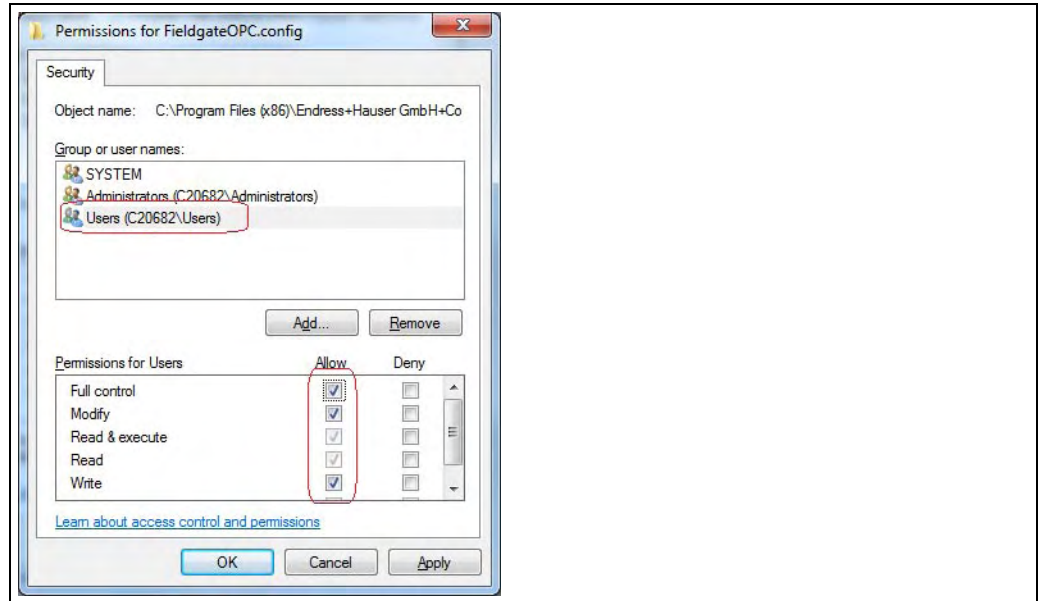
Windows XP
Configuration file are stored at **%ALLUSERSPROFILE%\Application Data\Endress+Hauser GmbH+Co. KG\Fieldgate OPC Server\Version_Number\PluginData**.

4.1   Basic OPC Server Configuration

Fieldgate FXA520/320 gateway can be configured by modifying the configuration file **FieldgateOPC.config**. User can configure this file manually or using **Fieldgate configuration tool** as explained below.

4.1.1   Manual Configuration

A connection can be added using the form of key value pairs as shown in below example:

```xml
<?xml version="1.0" encoding="utf-8"?>
<FieldgateOPCConfig xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <TagStructure>tag</TagStructure>
  <RetryInterval>30</RetryInterval>
  <configurations>
    <configuration>
      <TimeMethod>0</TimeMethod>
      <ScheduleInterval>10</ScheduleInterval>
      <HttpUrl>http://fieldgate.pcm.endress.com/index.xml</HttpUrl>
      <ConnectionType>1</ConnectionType>
      <HttpProxyAddress>proxy.endress.com</HttpProxyAddress>
      <HttpProxyPort>8080</HttpProxyPort>
    </configuration>
    <configuration>
      <TimeMethod>1</TimeMethod>
      <ScheduleInterval>10</ScheduleInterval>
      <HttpUrl>http://10.56.53.70/index.xml</HttpUrl>
      <ConnectionType>2</ConnectionType>
      <UserName>abc</UserName>
      <Password>abc</Password>
    </configuration>
  </configurations>
</FieldgateOPCConfig>
```

FieldgateOPCServer_Manual-Config

In above example 2 Fieldgate FXA520/320 gateways are configured. First Fieldgate connection required proxy setting but no use name and password but second Fieldgate required only username and password but no proxy setting.

🛈 Configuration elements are explained in detail in chapter "FieldgateOPC.config" (→ 🖺 16).

🛈 In case **FieldgateOPC.config** file gets damaged then delete this file from above mentioned location, restart OPC server. OPC server will copy back default configuration file.

4.1.2 Fieldgate configuration tool

Fieldgate Configuration tool (**FieldgateOPCConfigTool.exe**) can be access from **Start Menu → All Programs → FieldateOPCServer → Configuration**. Open configuration tool as shown below:
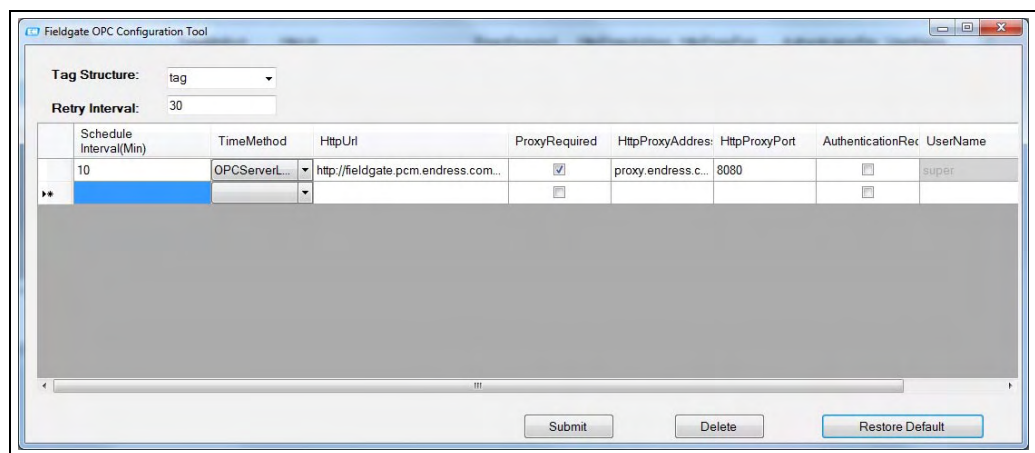
Add/modify or remove parameters on GUI and press **Submit** button to save configuration in **fieldgateOPC.config** file.
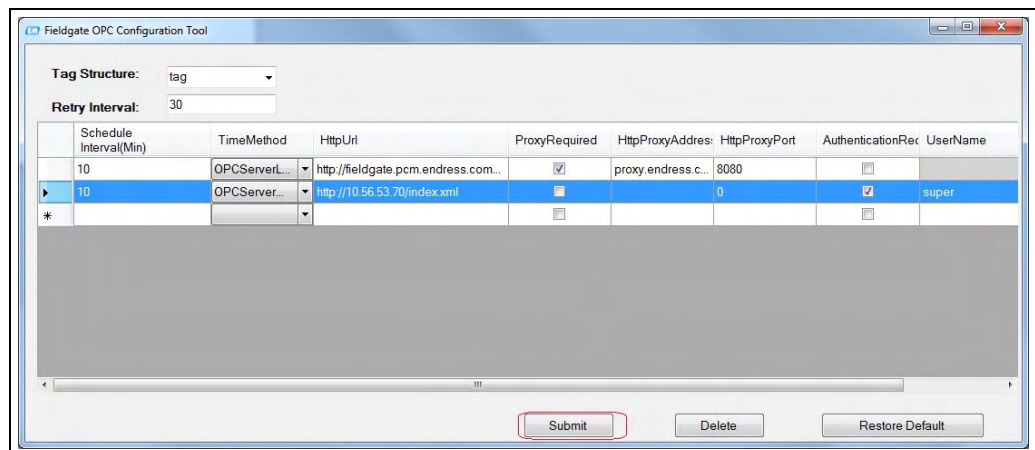
Select complete row and press **Delete** button to delete entry from configuration file.
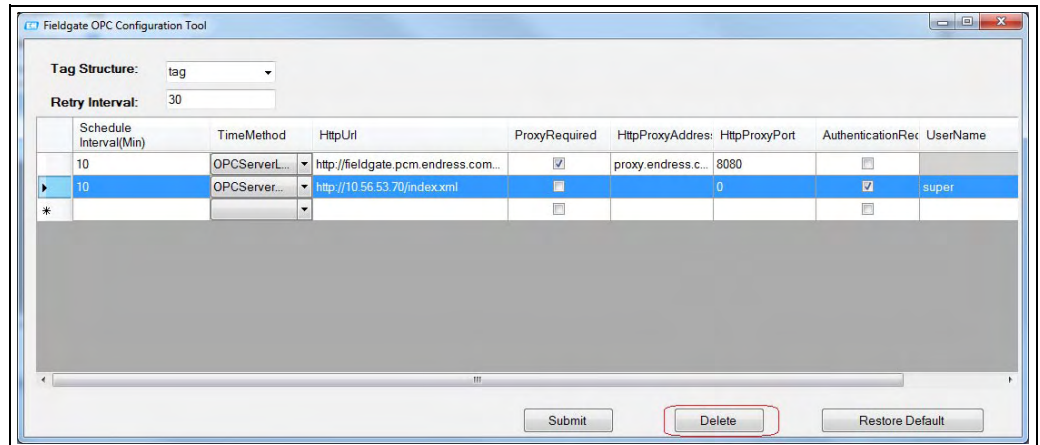
Press **Restore Default** button to get original configuration file.

4.2   Start OPC Server

OPC server will be automatically started after installation. User can also manually start/ restart OPC server by executing **RegServer.exe**.

4.3   Stop OPC Server

OPC server can be stopped by executing **UnregServer.exe**.

For Windows 7 , to start/stop server open command prompt in Administrator mode, go to project install directory and type **RegServer.exe** or **UnRegServer.exe**.

5 OPC Data Structure

Below diagram shows Fieldgate FXA520/320 OPC elements view from OPC Explorer/Client. Here, text mentioned in blue color are dynamic text and value will be received from Fieldgate. Texts in red color are static text.

```
tag/unid
|       \— Fieldgate 1 Tag/Id
|       |              |— Fieldgate Element 1
|       |              |— Fieldgate Element 2
|       |              |— Fieldgate Element ... N
|       |                   \— Device Tag/Id  -1
|       |              |              |— Device Element 1
|       |              |              |— Device Element 2
|       |              |              |— Device Element ...N
|       |              |              \—param
|       |              |              |              |—  Device Parameter 1
|       |              |              |              |—  Device Parameter 2
|       |              |              |              |—  Device Parameter...N
|       |                   \— Device Tag/Id  -2
|       |              |              |— Device Element 1...N
|       |              |              \—param
|       |              |              |              |—  Device Parameter1...N
|       |                   \— Device Tag/Id  -...N
|       |              |              |— Device Element 1...N
|       |              |              \—param
|       |              |              |              |—  Device Parameter1...N
|       \— Fieldgate 2 Tag/Id
|       |              |— Fieldgate Element 1... N
|       |                   \— Device Tag/Id  -...N
|       |              |              |— Device Element 1...N
|       |              |              \—param
|       |              |              |              |—  Device Parameter1...N
|       |              |              |              |
|       |              |              |              |
|       |              |              |              |
|       |              |              |              |
|       \— Fieldgate ...N Tag/Id
```

FieldgateOPCServer_OPC-Data-Structure

6   Fieldgate FXA520/320 OPC Parameter

Below tables give lists of Fieldgate parameters supported in OPC server.

Fieldgate Elements (tag.FXA320_test.ser)

No	Tag Name	id	Type	Description
1	ser	5000	string	Fieldgate serial number
2	tag	5001	string	Fieldgate name
3	type	5002	string	Full/partial
4	devices	5003	string	All/single
5	rev_xml	5004	string	Xml revision Number
6	time	5005	timestamp	Fieldgate timestamp (UTC Time)
7	timezone	5006	uint16	Time zone offset in min
8	ff_version	5007	string	H/W and S/W revision
9	os_version	5008	string	OS version
10	conf	5009	string	Fieldgate H/W configuration
11	ip	5010	string	IP address
12	httpport	5011	uint16	HTTPS port number
13	gsmp	5012	string	GSM Provider
14	Gsms	5013	string	GSM signal quality
15	gsmti	5014	timestamp	GSM Timestamp

Fieldgate Device Elements (tag.FXA320_test.PRESSURE.type)

No	Tag Name	id	Type	Description
1	_alive	5545	string	Device is active or not ('true/false')
2	_time	5546	timestamp	Time when entry is generated in OPC
3	_unid	5500	string	Device unit Id
4	_tag	5501	string	Device Tag name
5	id	5500	string	Device unit Id
6	tag	5501	string	Device Tag name
7	type	5502	string	Type of device (INTRN = data internal, HART = data from device
8	hlsts1	5503	string	Limit Value Status, channel 1 - PV
9	hlsts2	5504	string	Limit Value Status, channel 2 - SV
10	hlsts3	5505	string	Limit Value Status, channel 3 - TV
11	hlsts4	5506	string	Limit Value Status, channel 4 - QV
12	hltime1 - hltime4	5507 - 5510	timestamp	Status changed timestamp, channel 1-4 - PV,SV,TV,QV
13	chn1 - chn4	5511 - 5514	int	Channel: 01 = HART channel 1, 10 = HART channel 2, 11 = RS485
14	u1 - u4	5515 - 5518	string	channel 1-4 -PV,SV,TV,QV unit
15	v1 - v4	5519 - 5522	float	channel 1-4 -PV,SV,TV,QV Value

No	Tag Name	id	Type	Description
16	vstslvl	5523	int	Device error 0: OK 1: Warning 2: Error (according to HART6-Spec)
17	vtime	5524	timestamp	command 000 timestamp
18	v1_100	5525	float	Primary variable percent of range
19	v1_lc	5526	float	Primary variable loop current
20	fnum	5527	float	HART extended Device type
21	datecode	5528	float	Manufacture date of HART device
22	desc	5529	string	device description
23	msg	5530	string	User text (HART)
24	serno	5531	int	HART device serial number
25	hwrev	5532	int	HART device H/W revision
26	swrev	5533	int	S/W revision
27	devrev	5534	int	HART device revision number
28	cmdrev	5535	int	HART command revision number
29	preambl	5536	int	number of preambles (HART)
30	stime	5537	timestamp	Timestamp of cmd000 (HART) (brings: Expanded Device Type Code, Revision Levels, Device ID)
31	pid	5538	int	Product identification number (HART)
32	dev	5539	string	Device designation
33	man	5540	string	Device manufacturer
34	vsts	5541	string	–
35	vextsts	5542	string	–
36	stsext	5543	string	External module status (FXA520)
37	ctime	5544	timestamp	first 000 command timestamp

Fieldgate Device Parameters (tag.FXA320_test.PRESSURE.param.t1ch)

No	Tag Name	id	Type	Description
1	dch - dch4	5600 - 5603	boolean	1: Process value in overview, channels 1 - 4: PV, SV, TV and QV
2	p4	5604	float	Output Value at 4.00mA Input Current (internal sensor only)
3	p20	5605	float	Output Value at 20.00mA Input Current (internal sensor only)
4	r	5606	boolean	1: Alarm mail on sensor error
5	i - i4	5607 - 5610	boolean	1: Alarm mail on leaving limits, channels 1 - 4: PV, SV, TV and QV
6	o - o4	5611 - 5614	boolean	Alarm mail on returning to limits, channels 1 - 4: PV, SV, TV and QV
7	si - si4	5615 - 5618	boolean	1: Send SMS on entering limits (PV)
8	so - so4	5619 - 5622	boolean	1: Send SMS on leaving limits (PV)
9	t1ch - t1ch3	5623 - 5626	string	Additional text information line 1, channels 1 - 4: PV, SV, TV and QV

No	Tag Name	id	Type	Description
10	t2ch - t2ch4	5627 - 5631	string	Additional text information line 2, channels 1 - 4: PV, SV, TV and QV
11	lo - lo4	5631 - 5634	string	Low limit, channels 1 - 4: PV, SV, TV and QV
12	ll - ii4	5635 - 5638	float	Low Low limit, channels 1 - 4: PV, SV, TV and QV
13	hi - hi4	5639 - 5643	float	High limit, channels 1 - 4: PV, SV, TV and QV
14	hh - hh4	5643 - 5646	float	High High limit, channels 1 - 4: PV, SV, TV and QV
15	alt - alt4	5647 - 5650	float	Specified limit value for change channels 1-4: PV, SV, TV and QV
16	val - val4	5651 - 5654	float	last stored value
17	max - max4	5655 - 5657	float	Max. value reached by process value during operation, channels 1-4: PV, SV, TV and QV
18	min - min4	5659 - 5662	float	Min value reached by process value during operation, channels 1-4: PV, SV, TV and QV
19	hy - hy4	5663 - 5666	float	Hysteresis for re-entering limits, channels 1 - 4
20	swl - swl4	5667 - 5670	float	Switching level for status display, channels 1 - 4
21	swsts - swsts4	5671 - 5674	int	Text display switching status, channels 1 - 4: PV, SV, TV and QV
22	c	5675	string	–

Note!

- Parameters which are not present in connected Fieldgate are not visible on OPC Server.
- All Parameters are read only.
- If device tag is not present then OPC server uses device id to populate opc tag structure.
- If device tag contains "." (dot) in tag value, OPC server replaces "." with "_" (underscore). I.e. if device tag value is "4...20mA" then OPC server displays "4___20mA" on OPC Client.

7   Advanced OPC Server Configuration

7.1   FieldgateOPC.config

Below table describes possible selection of Fieldgate OPC Configuration tag:

XML Tag	Description

TagStructure	OPC Server populates OPC tree based on Tag Structure value
	• **tag** – OPC Tag generated with 'tag' Text
	  i.e. tag.\<fieldgate_id>.\<fieldgate_tag>.param.\<parameter>
	• **unid** – OPC Tag generated with 'unid Text
	  i.e. unid.\<fieldgate_serno>.\<fielddev_serno>.param.\<parameter>

RetryInterval	If connection with Fieldgate device is failed then OPC Server try to reconnect Fieldgate device after Retry interval. Retry interval is in **minute**.
TimeMethod	Which Time to display on OPC Server • **0** – OPC Server Local Time • **1** – OPC Server UTC Time • **2** – Fieldgate UTC Time • **3** – Fieldgate Local Time (UTC Time + Time zone Offset)
ScheduleInterval	Time interval to fetch new data from Fieldgate device. Value is in **minute**
HttpUrl	Fieldgate IP Address or URL complete string
ConnectionType	Http connection settings as mentioned below: • **0** – Http connection without proxy and authentication • **1** – Http connection with proxy but without authentication • **2** – Http connection without proxy but with authentication • **3** – Http connection with proxy and authentication
HttpProxyAddress	Proxy address required only for connection type 1 and 3
HttpProxyPort	Proxy port required only for connection type 1 and 3
UserName	Username required only for connection type 2 and 3
Password	Password required only for connection type 2 and 3

7.2   FIELDGATEOPCLOGGERCONF.xml

Fieldgate OPC Server provides different level of log level to capture variety of messages. OPC Server supports mainly seven user log level:

Log Level	Messages captured
FATAL	All Exception and critical messages
ERROR	Error messages and exception messages
WARNING	Warning messages and captures more messages as compare FATAL and ERROR
INFO	Provides information messages and captures more messages as compare to above
DEBUG	Provides all debug information
OFF	No user log
ALL	Captures all messages

In normal operation it is not required to change user log level but if OPC server is not working properly then user can change log level to get more details log information to analyse problem.

```
<logger name="OPC.DA.AppPlugin"> <level value="WARN"/>  </logger>
<logger name="OPC.DA.FieldgateOPCPlugin"><level value="WARN"/></logger>
```

<div align="right">FieldgateOPCServer_FieldgateOPCLoggerConfig-XML</div>

Windows XP:

For windows XP user has to do below changes to enable logger:

1. **DANSrvNet4.exe.config**: Change Logger configuration location as mentioned below:

```
<add key="LoggerConfiguration" value="C:\Documents and Settings\All Users\Application Da-
ta\Endress+Hauser GmbH+Co. KG\Fieldgate OPC Server\version_number\PluginData\ Field-
gateOPCLoggerConf.xml"/>
```

<div align="right">FieldgateOPCServer_FieldgateOPCLoggerConfig-XML_XP</div>

For windows XP user has to do below changes to enable logger:

7.3   Un-Installation

Go to **Control Panel** → **Programs** → **Uninstall program** and select **Fieldgate OPC Server**.
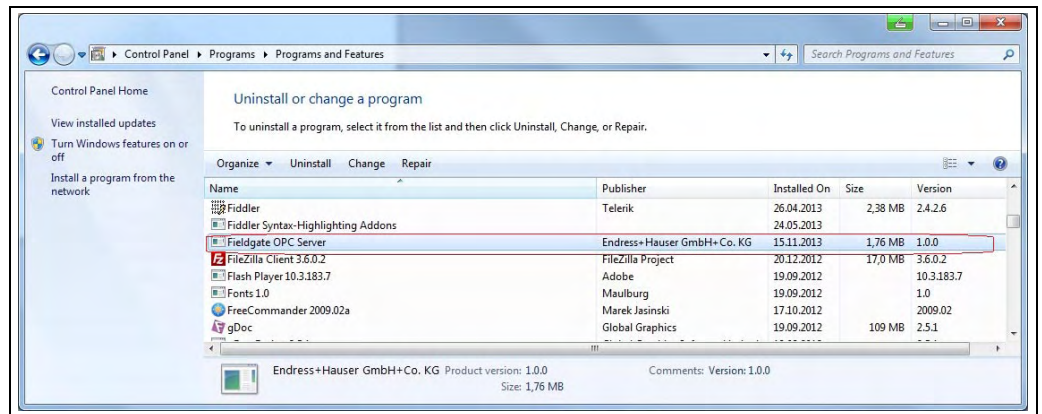
7.4   Fieldgate OPC Version

Fieldgate OPC Server version can be found from **Control Panel** → **Programs** → **Uninstall program** as shown in above figure. Here OPC Server version 1.0.0.

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