

OPC Server

FSM-5000-OPC

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1 Purpose

This document contains information on fire panels with OPC license and OPC Server version 2.0.x and upwards. It is about successfully configuring the panel network and the corresponding FSM-5000-OPC server to enable communication between both via a single or redundant Ethernet connection. In completing these steps successfully a functional interface is provided for a subsequent connection to BIS 4.x which functions as OPC client.

**Notice!**

Setting up and configuring a panel network controlled by an OPC server requires basic computer networking and fire domain knowledge.

The information refers to FSM-5000-OPC Version 2.0.x and later and supported panel software.

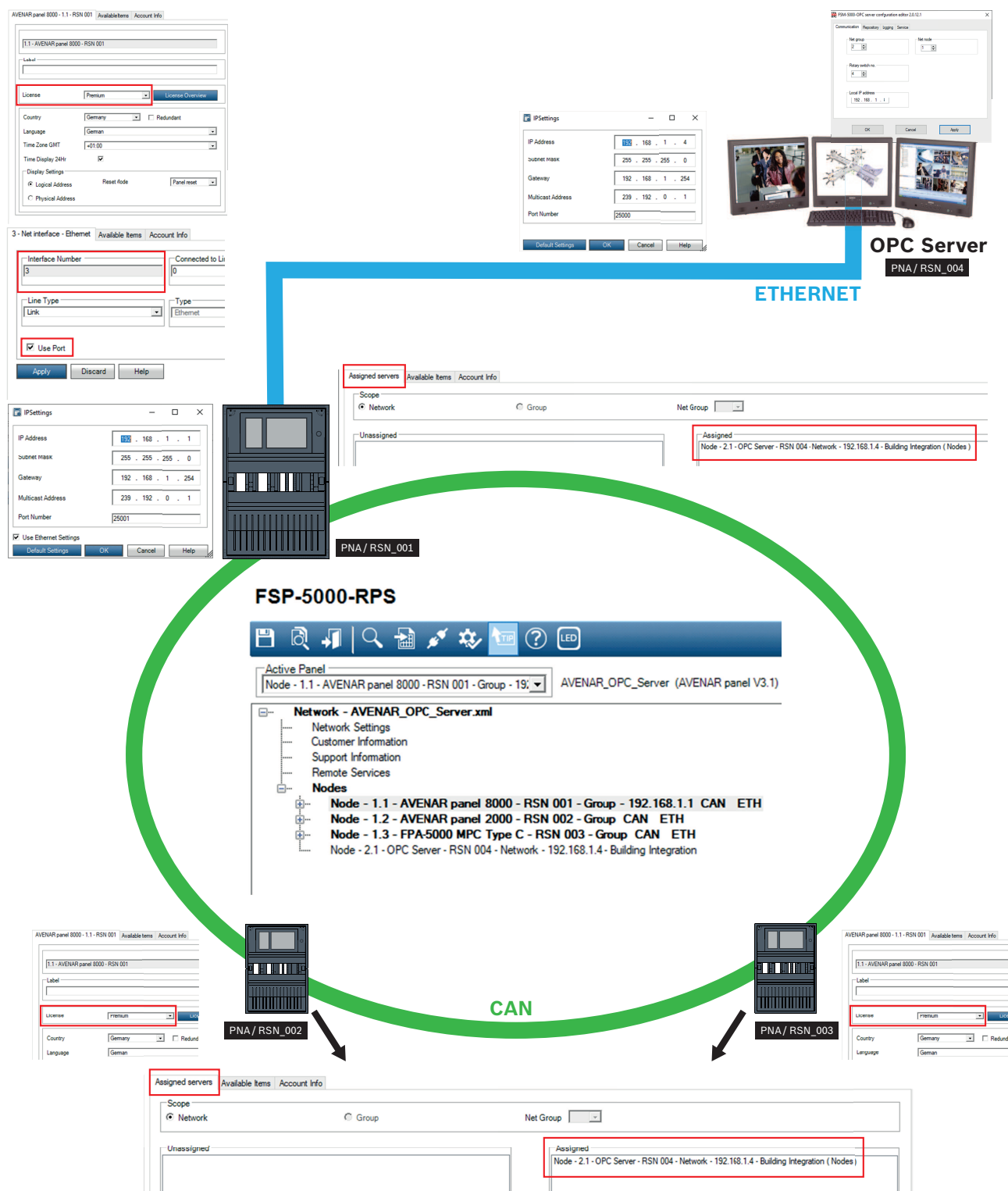


Figure 1.1: Panel network controlled by an OPC server with single Ethernet connection

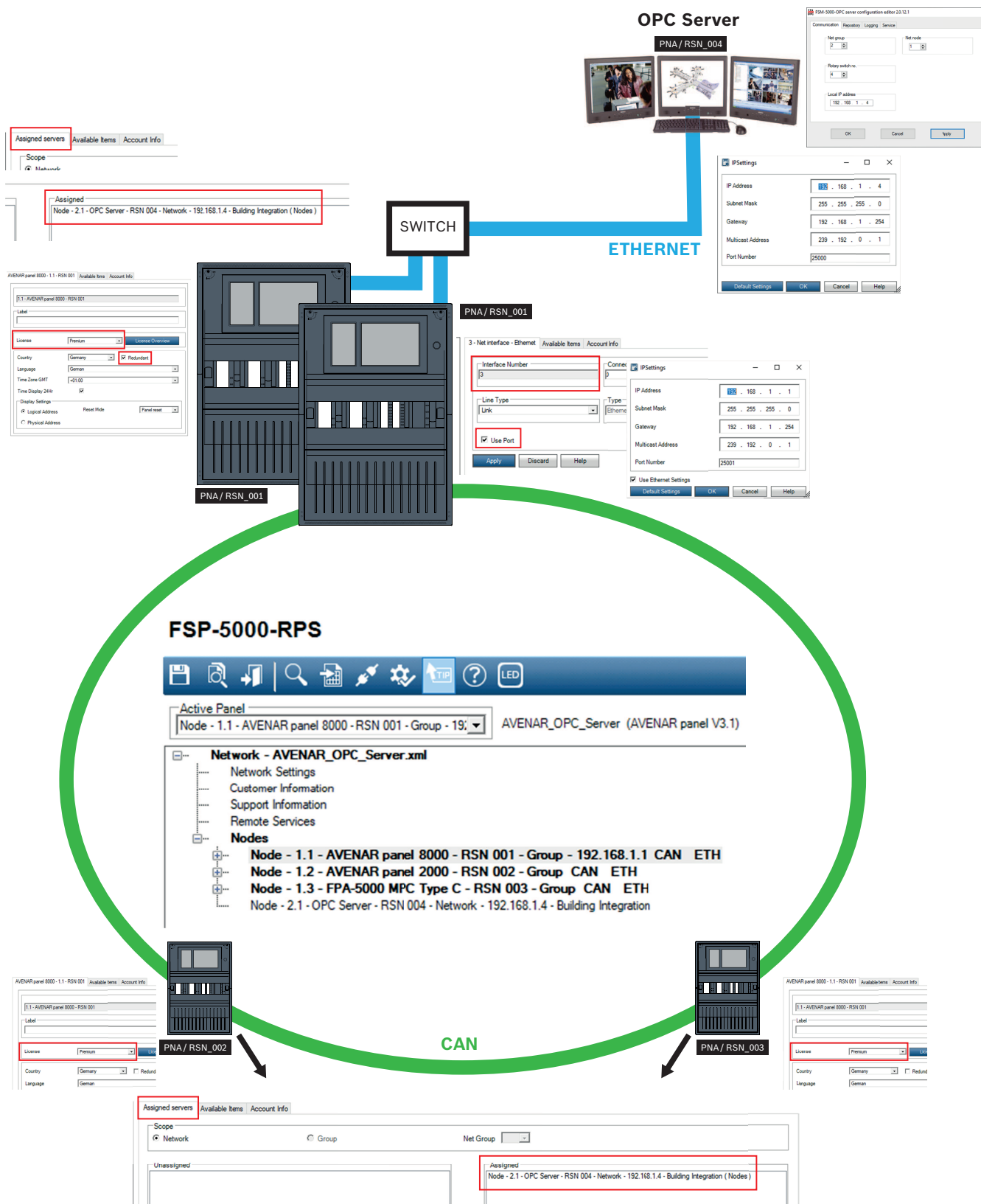


Figure 1.2: Panel network controlled by an OPC server with redundant panel

2 Preconditions



Notice!

Unintentionally data transfer

If the Ethernet interface of the panel controller is used only for communicating with an OPC server or for Remote Services, disable the panel communication over TCP/IP, in FSP-5000-RPS. Otherwise fire data could be transferred over the Ethernet unintentionally.

The following must be available to set up an OPC Server in a panel network:

- Panel with OPC license (e.g. AVENAR panel 8000 with premium license)
- Compatible FSP-5000-RPS Software
- FSM-5000-OPC Server version must be compatible to the respective panel release (Look up the compatible version in the readme file of the FSM-5000-OPC software)
- Existing Ethernet network with Cat. 5e cable
- Windows PC to install FSM-5000-OPC on

3 Installation

3.1 Installation of the OPC Software

Prerequisites:

- .NET Framework 4 must be installed to run FSM-5000-OPC
- Microsoft VC++ Redistributable for Visual Studio 2015 (32 bit)

**Notice!**

If the prerequisite software is not present, install it from the PreRequisites folder of the FSP-5000-RPS installation package or download it from <http://www.microsoft.com/downloads/en/default.aspx>

Task: FSM-5000-OPC is running on a PC.

1. Open the folder that contains the FSM-5000-OPC installation.
2. Click “Setup.exe” and follow the installation instructions.
3. Open the Configuration Editor:
Start → All Programs → Bosch → FPA5000OPC-Server and run Configuration Editor
or open Windows Explorer, navigate to
C:\Program Files (x86)\Bosch\FPA5000 OPC-Server\ and run ConfigEditor.exe
4. Under the “Communications” tab adopt the settings that were entered for the node “FPA5000 OPC Server” in the RPS configuration.
5. Configure the Windows firewall. The configuration depends on the operating system and the used firewall.
6. Restart the system.
FSM-5000-OPC will be running after restart, indicated by a notification icon in the taskbar notification area.

**Notice!**

The installation of FSM-5000-OPC is only released for the Windows operating systems listed in Technical Data. For other operating systems the installation may succeed but was not tested and is therefore on your own risk.

3.2 Remote Access to the OPC Server from the Building Integration System (BIS)

Task: FSM-5000-OPC is running on a PC in your local network interconnected with the panel network. The OPC client application runs on a PC of the Building Integration System (BIS) in the same local network. It remotely accesses the FSM-5000-OPC server.

Server side PC**Notice!**

Consider the naming conventions for users, groups and passwords (“MgtS-Service” “BISUsers”) given in this description. The Building Integration System (BIS) internally makes use of these conventions. As BIS internally always assumes the same user and password by convention it is not necessary to logon as a distinct user or enter the password. If you remotely access the FSM-5000-OPC server with another client, you are free to choose names and a password on the server side, as long as you specify the matching logon when your client connects to the OPC server.

All of the following settings refer to the PC running the OPC server.

**Notice!**

The following steps are based on the Windows 10 operating system. For all other operating systems the paths to the respective dialogs might be slightly different.

Create user „MgtS-Service“ manually

1. Go to **Local Group Policy Editor** and enter the following values:
 - **Username** (case sensitive): "MgtS-Service"
 - **Password**: Please contact BIS customer support if it is the BIS client you are using.
 - **Member of group**: Administrators
 - **User must change password at next logon**: NO
 - **User cannot change password**: YES
 - **Password never expires**: YES
2. Tab **Local Security Settings**:
 - **Log on as a service**: YES
 - **Log on as a batch job**: YES

**Notice!**

The user name and password must be identical with the user of the login server.

Create group BISUsers manually

1. Go to **Local Users Group Policy** and enter the following value:
 - Group name (case sensitive): "**BISUsers**"
2. Add the user "MgtS-Service" to that group
3. Add the user who logs in from the operating system of the login server and who operates the ConfigurationBrowser to that group too.

DCOM-Settings for the group BISUsers

1. Click Start > Run....
2. Type dcomcnfg <ENTER>.
3. Open the tree on the left side: **Console Root > Component Services > Computers > My Computer**.
4. Right click on **My Computer** and choose **Properties**.
5. Choose the **COM Security** tab.
6. Add the new group "BISUsers" by using **Access Permissions - Edit Defaults - allow Local and Remote Access**.
7. Add the new group "BISUsers" by using **Launch and Activation Permissions - Edit Defaults - allow Local and Remote Launch** and **allow Local and Remote Activation**.
8. Add the new group "BISUsers" by using **Launch and Activation Permissions - Edit Limits - allow Local and Remote Launch** and **allow Local and Remote Activation**.
9. Reboot the PC.

Set Local Security Policy

Perform the following procedure to set the Local Security Policy (e.g. Windows 10):

1. Go to **Start - Control Panel - Administrative Tools**, and select **Local Security Policy**.
2. Open the tree on the left side: **Security Settings - Local Policies- Security Options**.
3. Select on the right side: **Network access: Sharing and security model for local accounts**.

4. Right click on this selection to open **Properties** and choose **Classic- local users authenticate as themselves**.
5. Close all windows and restart the PC.
6. Open **dcomcnfg** and go to **services** (Local).
7. Select **FPA5000OPCServer - Properties** and open the **Log-On** tab
8. Choose radio button **This Account - User: MgtS-Service** and the password.
9. You are requested to restart the service in order to activate the changes. Select **Stop and Start** (or **Restart**).

Client side PC

On the PC running the FSM-5000-OPC client software connect to the server with the same logon you used to start the service. This also applies if you install both on the same PC. The OPC server installation routine installs the service for the local system account by default. Change the service to “MgtS-Service” when you use the OPC server with BIS.

3.3 Backward Compatibility

There are two setup packages to provide backward compatibility.

To install the respective file

1. Go to the Compatibility folder on the setup disk
2. Double click the respective msi-file



Notice!

Only use these packages if you require compatibility with solutions designed for versions prior to version 1.1 of FSM-5000-OPC server.

3.3.1

Package: BIS600StateConversion.msi

Description: States of the OPC server mapped to an offset of 600 instead of line status designed for backward compatibility of OPC Server version 2.0.x with older clients. For instance configurations read by BIS 1.0.x requires it in order to work with the 2.0.x OPC Server.

Postcondition: Registry entry for OPC configuration set.

3.3.2

Package: LanguageDependentCommand.msi

Description: The commands are language dependent like OPC Server 1.0.x. Designed for backward compatibility of OPC Server version 2.0.x with older clients. For instance configurations read by BIS 1.0.x requires it in order to work with the 2.0.x OPC Server.

Postcondition: Registry entry for OPC configuration set.

4 Step-by-Step Configuration

4.1 FSP-5000-RPS

1. Open the FSP-5000-RPS programming software.
2. In an existing configuration, click with the right mouse button on **Network line** in the tree view and choose **Create Server > Create OPC Server** in the context menu.
3. Configure the OPC server node.
Enter the virtual PNA/RSN and logical node.
4. Choose **IP Settings...** to enter the IP settings dialog.
5. Edit the fields accordingly. **Line 2** and **Subnet Mask** are mandatory fields, Port Number is 25000 and **Gateway** is optional.

**Notice!**

The settings must match the network adapter/card settings of the computer the FSM-5000-OPC Server will be installed on!

The values of Net Group and Node Address, the PNA/RSN and the IP address are required to configure the OPC server.

6. Confirm your changes with **OK** and leave the dialog.
7. Click on the panel node that will be physically connected to the Ethernet.
A dialog box for configuration opens.
8. Choose **IP Settings...** to enter the IP settings dialog.
9. Edit the fields accordingly. Panels not directly connected to the Ethernet have not assigned an IP address.
10. Confirm your changes with **OK** and leave the dialog.
11. Click on **Net interfaces** and on **Net interface - Ethernet** with the corresponding port that physically connects the Ethernet cable to the OPC server.
12. Select **Use Port** and click on **Apply**.

**Notice!**

Use ETH3 for connecting an OPC server. Connection via an external RSTP switch is allowed when not used for panel networking. If there is no Ethernet panel networking, then ETH1 and ETH 2 can be used for connecting an OPC server. If no connection to Remote Services is required, then ETH4 can be used for connecting an OPC server as well.

13. Choose the country and the language from the list

**Notice!**

Take care about the country and language settings. BIS 4.x will display commands and detector names in the selected language.

14. Confirm your settings with **OK** and leave the dialog.
15. Click on **Assigned servers**.
A dialog box opens.
16. Assign the OPC server to the panel. Repeat this task for each node that shall transmit its states to the OPC server.

**Notice!**

It is mandatory that each panel node is assigned to the OPC server to be available in BIS. A premium license is required for each node to be assigned to an OPC server.

17. Confirm your changes with **OK** and leave the dialog.

4.2 Panel Controller

- AVENAR panel 8000 / 2000 with premium license: Connect the Cat.-5 cable with the Ethernet port 3 (ETH03).
- FPA-5000 (MPC-xxxxx-B or MPC-xxxx-C): Connect the Cat.-5 cable with the Ethernet port (RJ45).

4.3 PC/Server

1. Connect the Cat.-5 cable to the PC Ethernet port. Afterwards open the DOS command window and successfully “ping” the panel controller.
2. Right click on the OPC icon in the taskbar notification area and open the **Connection** dialog. A list with all identified panels and their respective connection status is displayed. If the configuration was successful, all panels which are assigned to the OPC server should have the status “connected”.
You can also find these information in a log file, located on C:\Program Files (x86)\Bosch
3. \FPA5000 OPC-Server\Log (for Windows 10, might be slightly different for other operating systems).

5 Troubleshooting

If the configuration of the FSM-5000-OPC server doesn't work in the panel network try the following:

- Confirm on the panel controller that the IP address is assigned and "ping" the OPC server.
- If the Ping request is answered but the configuration still doesn't work please check
 - all settings on the panel,
 - all settings in the FSM-5000-OPC Configuration Editor,
 - the Ethernet adapter settings in the Window's System Configuration.
- De-activate firewall
- Follow these steps:
 - Stop OPC (see "Service" tab in Configuration Editor)
 - Delete bin file(s) under C:\MPOPCServer\Repository
 - Start OPC → A new file per node will be created.
- If no elements are shown, check whether the Repository folder exists and whether it contains a bin file for each node. The files are located under C:\MPOPCServer\Repository.
- On the MPC panel controller go to **Diagnostics - Network - Routing table**.
A table with routing information is displayed. All networked nodes that can be reached via the panel and that are recognized within the system network are displayed under Node. Aside the respective interfaces via which the connected network nodes are connected to the panel are displayed. If the OPC server configuration is correct there must be an entry under **Node** with the RSN of the OPC server node and the interface "UDP tunnel".
- Make sure that the panel controller does not show any troubles which could concern the OPC server node or the network communication in general.
- Verify that you have a panel controller with premium license (AVENAR). FPA-5000 has with FW 3.x a premium license by default. With FPA-5000 FW 1.x and 2.x you need an OPC address card.

6 Technical data

Supported OPC standards:

- DA 2.0
- AE 1.01

Other Standards

- “BIS Common Requirements” (Bosch standard).

Supported operating systems:

- Windows 10 (64 bit)
- Windows 2016 Server
- Windows 2019 Server

Limits

For each panel approximately 2000 OPC items can be created in maximum configuration.

Memory

For configuration data caching a file with approximately 200kb is stored for each panel in the repository folder.

Licensing

Each panel controller requires a premium license to be assigned to an OPC server.

7

Appendices

7.1

Appendix A.1 - State Table 1

OPC Item Value	Internal Panel Compound State	Description
600	Invalid	
601	Normal	
602	Fault	
603	Fire	
604	Fire Pre	1 st state AND / Cross zoning
605	Fire verify	Alarm Verification
606	Heat	
607	Supervisory	Supervisory Error
608	Smoke	
609	Activate	
610	Activation failed	
611	Tamper	
612	Cover open	Cover is open
613	Paper out	Paper is out
614	Threshold Alarm	1 st stage fire, threshold
615	Trouble light	Light trouble, e.g. C-Sensor of a combined detector not working
616	Panel Restart by Watchdog	Panel restarted by watchdog
617	On	
618	Off	
619	Pollution	
620	Pollution light	
621	Monitor	
622	Water	
623	Power Fail	
624	Manual Alarm	
625	Fire PAS	PAS (Wait for acknowledge)
626	Fire PAS	PAS (Investigate)
627	Address card change	Address card changed

628	Not enough address space	Address card changed and now there are less addresses licensed than points configured
629	Address card tamper	The countdown after address card removal is finished, addresses are to be switched off
630	Fire internal	Internal fire, results from a usage type "FIRE_INT"
631	Error	Indicates an invalid value for a logical state since INVALID is used elsewhere in the system
632	Unknown	For state stor use only
633	internal use	Wild card
634	Configuration mismatch	Mismatch of network configuration (topology information)
635	Unknown item	Unconfigured item i.e. network node detected
636	Missing	Configured item i.e. network node NOT detected, for internal items currently trouble used
637	Incompatible software	Incompatible software detected for nodes in network
638	Incompatible network protocol	Incompatible network protocol version detected for nodes in network
639	internal use	
640	internal use	
641	Walktest Normal	
642	Walktest Fault	
643	Walktest Activate	
644	Walktest Activation failed	
645	Walktest On	
646	Walktest Off	
647	Walktest Alarm	
648	Bypass Normal	
649	Bypass Fault	
650	Bypass Activate	
651	Bypass Isolated Activation failed	
652	Bypass Alarm	
653	Isolate Normal	
654	Isolate Fault	
655	Isolate Activate	

656	Isolate Activation failed	
657	Isolate Alarm	
658	Normal Day Mode	
659	Fault Day Mode	
660	Alarm Day Mode	

Table 7.1: Appendix A.1 - State Table 1

7.2

Appendix A.2 - State Table 2

OPC Item Value	Description	LZ Name
0	Missing Zone	FG
1	Detector masking	MAD
2	Fade-out/Skip	ABL
3	Zone switch off	ABS
4	Detector test	TST
5	Stand-by/Control off	GE
6	Breakdownw centr. part	G8
7	Control On	STE
8	Malfunction ground	ES
9	Criterion -4	K4
10	Criterion -3	K3
11	Criterion -2	K2
12	Malfunction generic	G0
13	Emergency alarm	H1
14	Int-Fire	F3
15	Pre-Fire	F2
16	Ext-Fire (TU)	F1
17	Trigger disarmed	A6
18	Intern-Alarm	A5
19	Int-Sabotage	A4
20	Ext-Sabotage (TU)	A3
21	Ext-Intrusion (TU)	A2
22	Hold-up Alarm (TU)	A1

23	Ext-Malfunction.(TU)/Ext-Fire. (TU)	A0
24	Stand-by/Off	PE
25	On	P2
26	Acknowledgement	P3
27	Malfunction	P4
28	Malfunction power supply	P5
29	Switch Off	P6
30	Alarm verification	TEL
31	Address Blocking	ASP
32	Triggering generic	R-FG
33	Maint.-Stand-by OMM	R-GE
34	Maint.-Light Pollution	R-G0
35	Maint.-Heavy Pollution	R-G2
36	Maint.-Alarm OMM	R-AL
37	Maint.-Stand-by/Control Off	R-GE
38	Maint.-Breakdown Centr. Part	R-G8
39	Maint.-Control On	R-STE
40	Maint.-Malfunction Ground	R-ES
41	Maint.-Criterion-4	R-K4
42	Maint.-Criterion -3	R-K3
43	Maint.-Criterion -2	R-K2
44	Maint.-Malfunction	R-G0
45	Maint.-Emergency Alarm	R-H1
46	Maint.-Int-Fire	R-F3
47	Maint.-Pre-Fire	R-F2
48	Maint.-Ext-Fire	R-F1
49	Maint.-Triggering	R-A6
50	Maint.-Intern Alarm	R-A5
51	Maint.-Alarm Thermo (UGM)	R-A4
52	Maint.-Alarm Optics (UGM)	R-A3
53	Maint.-Ext-Intrusion (UGM)	R-A2
54	Pollution (UGM)	R-A1
55	Maint.-Malfunction-Ext	R-A0
56	Stand-by R-R/Max (UGM)	R-PE

57	Stand-by ThermoMax (UGM)	R-P2
58	Stand-by Optics (UGM)	R-P3
59	Alarm Pre-Level (UGM)	R-P4
60	Fire-Int Thermo (UGM)	R-P5
61	Fire-Int Optics (UGM)	R-P6
62	Fire-Ext Thermo (UGM)	R-TEL
63	Fire-Ext Optics (UGM)	R-ASP
64	Stand-by R-R/Max	GE-TD
65	Stand-by TMax	GE-TM
66	Stand-by Optics	GE-O
67	Stand-by Combi	GE-K
68	Light Pollution	V2
69	Heavy Pollution	V1
70	Heavy Pollution (Qty.)	V0
71	Alarm Pre-Level Ion	AV-I
72	Alarm Pre-Level Optics	AV-O
73	Alarm Pre-Level Thermo	AV-T
74	Alarm Pre-Level Combi	AV-K
75	Maint.-Alarm Optics	R-F1-O
76	Maint.-Alarm Thermo	R-F1-T
77	Maint.-Alarm Combi	R-F1-K
78	Fire-Ext Opt	F1-O
79	Fire-Ext Thermo	F1-T
80	Fire-Ext Combi	F1-K
81	Call Fire Brigade	FWR
82	Fire-Pre (TU)	F2-E
83	Fire-Int Opt	F3-O
84	Fire-Int Therm	F3-T
85	Fire-Int Combi	F3-K
86	Hold-up alarm with menace (TU)	A1-B
87		
88	Stand-by Day/Internal	T-GE
89	Periph. Control On	P8
90	Light Malfunction	G1

91	Line Malfunction	G2
92	End of Paper	PA
93	Triggering Disarmed	A7
94	Mains	Fault
95	Battery	Fault

Table 7.2: Appendix A.2 - State Table 2

