Panasonic

OPC UA

OPC UA GATEWAY FOR EBLWEB IN GATEWAY 5088

Fire alarm solutions
technical description

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1. INTRODUCTION

This document describes the OPC UA functionality in Gateway 5088 for System EBL512 G3. The OPC UA Gateway for EBLWeb application supports the binary TCP protocol i.e. opc.tcp://.

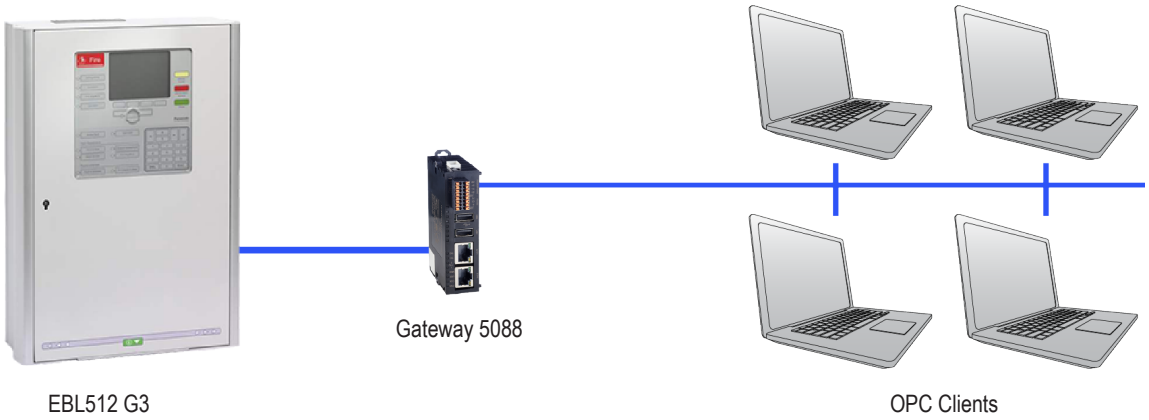
2. ABBREVIATIONS

OPC UA	Open Platform Communications - Unified Architecture
SSD	Site Specific Data

3. GENERAL DESCRIPTION

The OPC UA in System 512 G3 vill consist of two major parts:

- EBL512 G3 Fire Alarm System
- Gateway 5088



The OPC UA Gateway is a software that runs simultaneously with EBLWeb 3.0.X (or later versions) in a Gateway 5088.
The Gateway 5088 will act as an OPC UA server where OPC UA client can connect. The OPC UA data presentation (node objects) and operations (methods) that are provided for the Fire Alarm System EBL512 G3 is described in this document.

In this solution, the OPC UA clients can get information about alarms, faults, disablement etc. It will also be possible to e.g. reset fire alarms, acknowledge faults, depending on user level, via the OPC UA clients. The range of presentations and operations that can be performed via the OPC UA Gateway is dependent on the design of the OPC UA client.

4. INTERFACE STRUCTURE

4.1. GENERAL

The OPC UA information model is based on nodes, which can include any kind of meta information, such as data attributes for read access or methods for operations.

The OPC UA Gateway will expose nodes for the following:

- EBL System
- Alarm Point
- Alarm Zone
- Fault
- Disablement
- Interlocking
- Technical Warning
- Force Activated Output

4.2. EBL SYSTEM

The EBLSystem folder will provide a list of current status and counters for the system.

VARIABLES

Tag	Type	Description
EBLWebConnection	Uint	Connection between OPC UA Gateway and EBLWeb. I.e EBLWeb not started. 0 = No Connection., 1 = Connection OK
LicenseState	Uint	0 = Invalid, 1 = Valid, 2 = Demo, 3 = Expired
SSDFileChecksumFault	Uint	0 = No fault, 1 = Checksum fault (See 5.1.3)
NoOfFireAlarm	Uint	Number of fire alarms
NoOfOtherAlarm	Uint	Number of other alarms (pre-warning, co-incidence alarm, quiet alarm, delayed alarm, test mode alarm)
NoOfFault	Uint	Number of faults
NoOfDisablement	Uint	Number of disablements
NoOfTechnicalWarning	Uint	Number of technical warnings
NoOfInterlocking	Uint	Number of interlocking combinations
NoOfOutputForceActivation	Uint	Number of force activated outputs
NoOfServiceSignal	Uint	Number of service signals
NoOfZoneInTest	Uint	Number of zone in test mode
NoOfOpenDoor	Uint	Number of opened doors
ComFaultCU	Uint	RS-232 com.fault between Gateway 5088 and Control Unit (EBLWeb <-> CU). 0 = No fault, 1 = Communication fault
AlertActivated	Uint	Alert annunciation activated. 0 = No, 1 = Yes
AlertAcknowledged	Uint	Alert annunciation acknowledged. 0 = No, 1 = Yes

STATUS-FLAGS

Tag	Type	Description
Status_ATRActivated	Uint	Alarm transmitter activated. 0 = No, 1 = Yes
Status_ATRDisabled	Uint	Alarm transmitter disabled. 0 = No, 1 = Yes
Status_AlarmDevicesDisabled	Uint	Any Alarm devices disabled. 0 = No, 1 = Yes
Status_AlarmDevicesFault	Uint	Alarm devices fault. 0 = No, 1 = Yes
Status_AlarmDevicesSilenced	Uint	Alarm devices silenced. 0 = No, 1 = Yes
Status_ControlOff	Uint	Control Off (All Control-, Ventilation-,and Extinguishingoutputs disabled.). 0 = No, 1 = Yes
Status_DoorSwitch	Uint	Door switch. 0 = No, 1 = Yes
Status_ExtinguishingSystemActivated	Uint	Extinguishing system activated. 0 = No, 1 = Yes
Status_ExtinguishingSystemDisabled	Uint	Extinguishing system disabled. 0 = No, 1 = Yes
Status_FTRActivated	Uint	Fault transmitter activated. 0 = No, 1 = Yes
Status_FTRDisabled	Uint	Fault transmitter disabled. 0 = No, 1 = Yes
Status_Fault	Uint	Unacknowledged faults. 0 = No, 1 = Yes
Status_GeneralDisablement	Uint	Disablements. 0 = No, 1 = Yes
Status_GeneralFault	Uint	Faults. 0 = No, 1 = Yes
Status_GeneralFire	Uint	Fire alarms. 0 = No, 1 = Yes
Status_PowerSupplyFault	Uint	Power supply fault. 0 = No, 1 = Yes
Status_ServiceSignal	Uint	Service signal. 0 = No, 1 = Yes
Status_TestModeActivated	Uint	Test mode activated. 0 = No, 1 = Yes
Status_VentilationActivated	Uint	Ventilation system activated. 0 = No, 1 = Yes
Status_AlertAnnunciationActivated	Uint	Alert annunciation function activated. 0 = No, 1 = Yes
Status_AllAlarmDevicesDisabled	Uint	All alarm devices disabled. 0 = No, 1 = Yes
Status_MoreAlarms	Uint	More alarms. 0 = No, 1 = Yes

METHODS

Tag	Input parameter	Description
AckAlertAnnunciation	None	Acknowledge Alert Annunciation.
ResetAlertAnnunciation	None	Alert Annunciation reset.
ResetAll	None	Reset all fire alarm.
ResetSingle	Zone, Address	Reset fire alarm point.
DisableAlarmDevices	None	Disable Alarm Devices.
ReEnableAlarmDevices	None	Re-enable Alarm Devices.
DisableOutputTypeControl	None	Disable OutputType - Control.
ReEnableOutputTypeControl	None	Re-enable OutputType - Control.
DisableOutputTypeVentilation	None	Disable OutputType - Ventilation.
ReEnableOutputTypeVentilation	None	Re-enable OutputType - Ventilation.
DisableOutputTypeExtinguishing	None	Disable OutputType - Extinguishing.
ReEnableOutputTypeExtinguishing	None	Re-enable OutputType - Extinguishing.
DisableOutputTypeATR	None	Disable OutputType - ATR.
ReEnableOutputTypeATR	None	Re-enable OutputType - ATR.
DisableOutputTypeFTR	None	Disable OutputType - FTR.
ReEnableOutputTypeFTR	None	Re-enable OutputType - FTR.
DisableOutputTypeInterlocking	None	Disable OutputType - Interlocking.
ReEnableOutputTypeInterlocking	None	Re-enable OutputType - Interlocking.
ActivateSilenceAlarmDevices	None	Activate Silence Alarm Devices.
DeActivateSilenceAlarmDevices	None	De-activate Silence Alarm Devices.
Synchronize	None	Start synchronization command in EBLWeb.
AcknowledgeAllFaults	None	Start Acknowledge all faults command in EBLWeb.

4.3. ALARM POINT

The AlarmPoints folder is a pre-allocated list with all alarm points in the system.

VARIABLES

Tag	Type	Description
Zone	Uint	Zone number 001-999
Address	Uint	Address number 01-99
Text	String	Free text of alarm point (only shown when alarm occurs)
Fault	Uint	In fault state: 0 = No, 1 = Yes
Service	Uint	Service signal: 0 = No, 1 = Yes
Point-Disabled	Uint	Disabled by alarm point: 0 = No, 1 = Yes
Zone-Disabled	Uint	Disable by alarm zone: 0 = No, 1 = Yes
Status	Uint	See Fire status
Status-Message	String	Fire status value in text
Status_Fire	Uint	0 = No, 1 = At least in fire state. (Fire, Heavy smoke, High heat, Wait for acknowledge, Wait for investigation, Real test mode fire)
Status_MuchFire	Uint	0 = No, 1 = At least in much fire state. (Heavy smoke, High heat)
Status_Prewarning	Uint	0 = No, 1 = At least in prewarning state. (Prewarning)

METHODS

Tag	Input parameter	Description
Reset	None	Reset fire alarm point.
Disable	Auto.ReEnable, ReEnable time (HH:MM), Smoke Only	Disable alarm point.
ReEnable	Smoke Only	Re-enable alarm point.

FIRE STATUS

Status	Description
0	Normal / No fire
1	Fire
2	Prewarning
3	Heavy smoke
4	High heat
5	Wait for dependency (2-unit dependency)
6	Wait for acknowledge (alert annunciation)
7	Wait for investigation (alert annunciation)
8	Test mode fire (during zone in test)
9	Real test mode fire
10	Delayed alarm
11	Quiet alarm
12	Isolated alarm

4.4. ALARM ZONE

The AlarmZones folder is a pre-allocated list with all alarm zones in the system.

VARIABLES

Tag	Type	Description
Zone	Uint	Zone number 001-999
Status	Uint	0 = Normal, 1 = Fire (fire, heavy smoke, high heat, real test mode fire) at one or more alarm-point(s) in this zone.

METHODS

Tag	Input parameter	Description
Disable	Auto.ReEnable, ReEnable time (HH:MM)	Disable alarm zone
ReEnable	none	Re-enable alarm zone

4.5. FAULTS

The Faults folder is a dynamic list with all faults currently active in the system.

VARIABLES

Tag	Type	Description
Text	String	Fault text information
Status	Uint	See Fault status
Status-message	String	Fault status value in text

METHODS

Tag	Input parameter	Description
Acknowledge	None	Acknowledge fault

FAULT STATUS

Status	Description
1	Serviced
2	Acknowledged

4.6. DISABLEMENT

The Disablements folder is a dynamic list with all disablements currently active in the system.

VARIABLES

Tag	Type	Description
Text	String	Text information

METHODS

Tag	Input parameter	Description
ReEnable	None	Re-enable the disablement

4.7. INTERLOCKING

The Interlocking folder is a dynamic list with all interlockings currently active in the system.

VARIABLES

Tag	Type	Description
Area	Uint	Area number 001-999.
Point	Uint	Point number 01-99.
Text	String	Text information.
Input	Uint	Input activated: 0 = No, 1 = Yes.
Output	Uint	Output activated: 0 = No, 1 = Yes.

4.8. TECHNICAL WARNING

The TechnicalWarnings folder is a pre-allocated list with all technical warnings in the system.

VARIABLES

Tag	Type	Description
Id	Uint	Technical warning number.
Text	String	Text information.
Status	Uint	0 = Inactive, 1 = Active.

4.9. FORCE ACTIVATED OUTPUT

The ForceActivatedOutputs folder is a pre-allocated list with all force activated outputs in the system.

VARIABLES

Tag	Type	Description
Id	String	Internal identification for output. See Output identification
Text	String	Text information
Status	Uint	Output is force activated: 0 = No, 1 = Yes

OUTPUT IDENTIFICATION

An output identification may consist of alphanumeric characters to identify where the output resides.
Example: CU01.L0.U023.O1 is Control unit 01, Loop 0, Unit 023, Output 1.

Short Id	Description
CU	Control unit
L	Loop (COM-loop)
U	Unit (Loop unit)
B	Board (Expansion board)
O	Output
R	Relay output
V	Voltage output

METHODS

Tag	Input parameter	Description
Force-activate	None	Force activate the output
De-activate	None	Deactivate the force-activated output

5. CONFIGURE OPC UA Gateway

There are some prerequisites needed to setup OPC UA Gateway for EBLWeb.

- EBLWeb 3.0.x (Installed and configured via EBLWin in prior)
- Gateway Application Tool 1.0.x (Application installer for Gateway 5088)
- OPC UA Gateway 1.0.x (software file e.g. gw-opcua1.0.0.bin.)

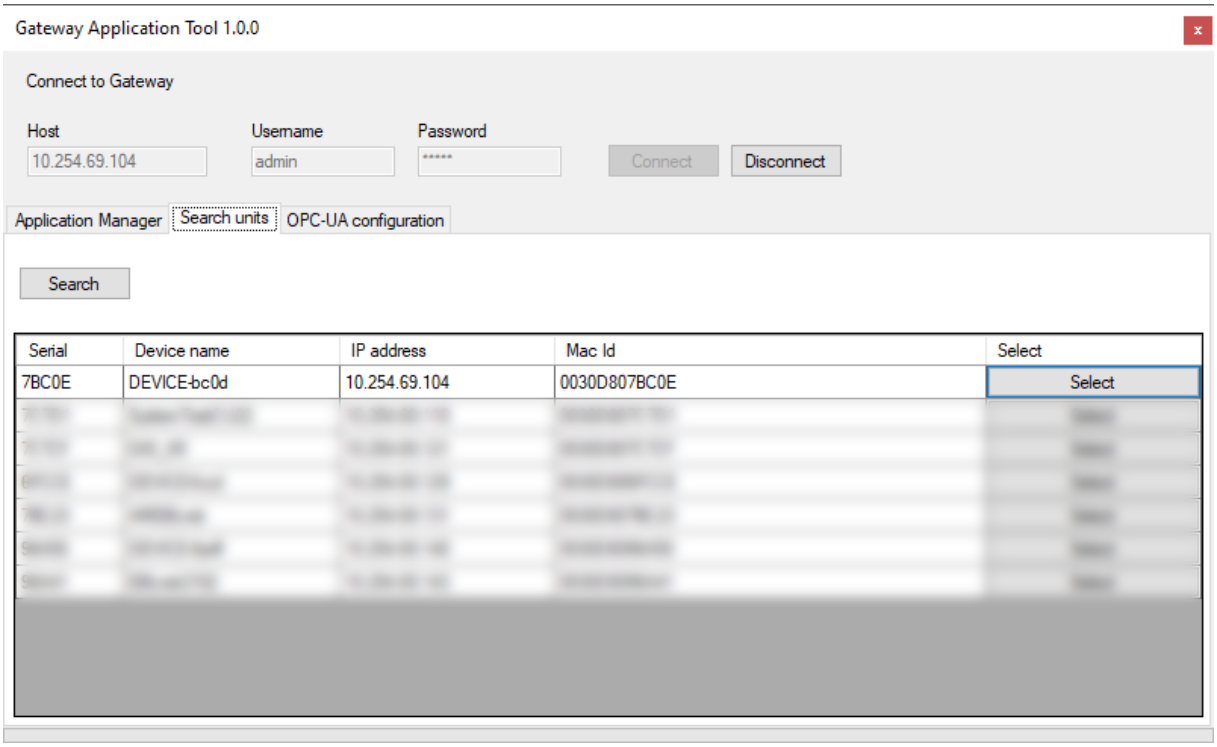
5.1. GATEWAY APPLICATION TOOL

This tool is used to install OPC UA Gateway software to the Gateway 5088. Here is a guideline to install and setup OPC UA Gateway.

5.1.1. CONNECT TO GATEWAY 5088

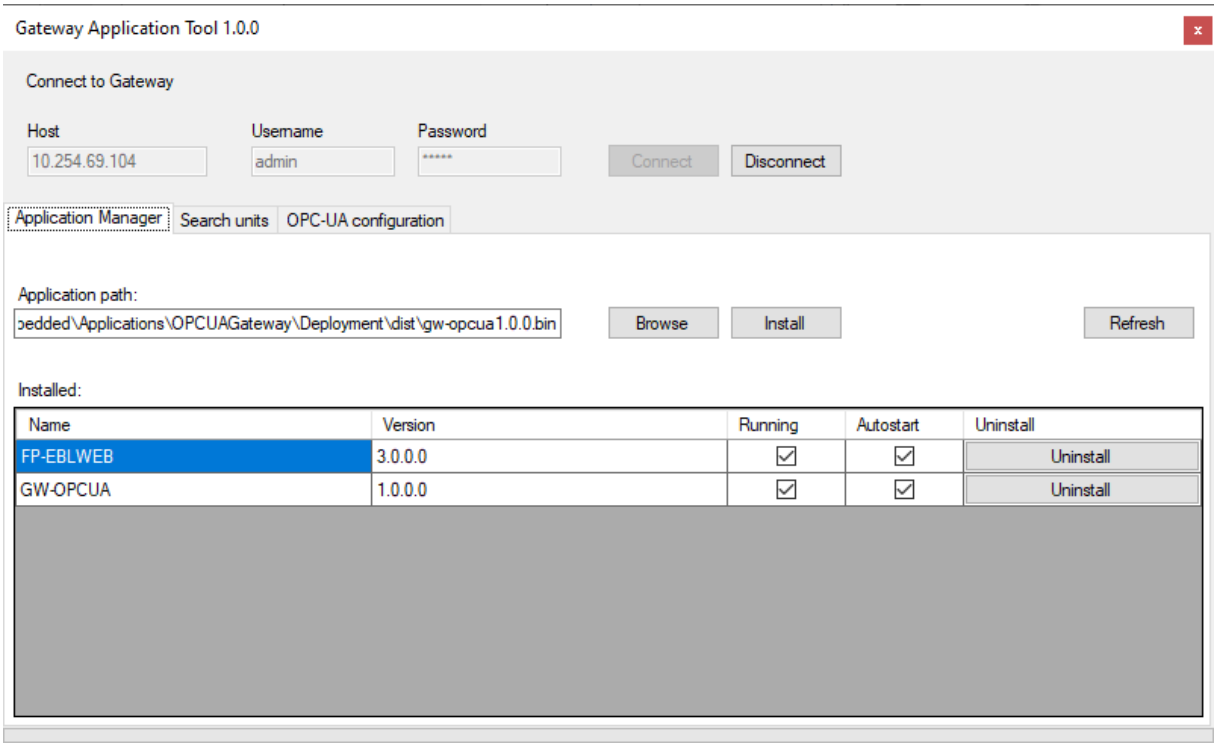
To connect to a Gateway 5088, one might either enter the Host address for the actual Gateway or if the host address is not known, use the search function to scan the network in Search units tab page, and select the Gateway unit of interest. Once the host address is entered, use the username/password with admin credentials to connect to the gateway.

If the Gateway Application Tool shows timeout, it means that the Gateway 5088 has disconnected the connection and it needs to be re-connected again.



5.1.2. INSTALL OPC UA GATEWAY

Use the Browse button to select the OPC UA Gateway software to be installed, e.g. gw-opcua1.0.0.bin. Once the application path has been entered, click Install button to install the software. Once installed, there should be two software residing in the Gateway unit, FP-EBLWEB and GW-OPCUA. The FP-EBLWEB software should already be running with autostart. To start the GW-OPCUA software, set the checkbox for running, and also set autostart to have it start up automatically after restart of Gateway.



5.1.3. CONFIGURE OPC UA GATEWAY

DOCUMENT DATA

To configure the OPCUAGateway, go to the tab page OPC UA configuration. Browse and Load the EBLWin configuration (*.eblwin) to prepare additional information that is needed for OPC UA Gateway to create nodes for technical warnings, interlocking combinations and force-activation outputs.

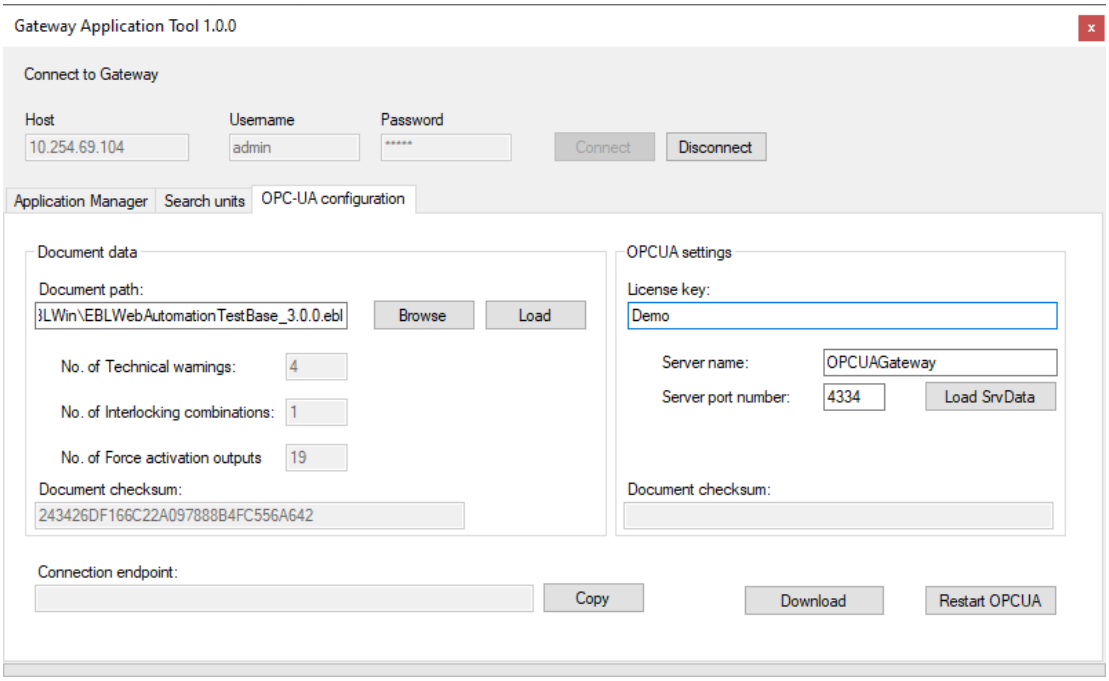
The Document checksum is used in OPC UA Gateway to compare the document with the SSD in EBLWeb, to make sure that the configuration uses an up-to-date document. The corresponding flag for SSDFileChecksumFault will be active if the document checksum differs.

OPC UA SETTINGS

The license key is used to let OPC UA Gateway communicate with EBLWeb. The license file is the same as EBLnet license for Gateway 5088, and in 'Demo' mode, the communication will work for approximately 1 hour.
In OPCUA Settings:

1. Enter 'Demo' as License key for demo mode.
2. Set Server name and Server port number to be used for the OPC UA Gateway.

An OPC UA client may connect to this server using the server port number. The default server name 'OPCUAGateway' can be changed, in cases if one OPC UA client wants to connect to several servers, and be able to differ the servers by name.
The Load SrvData button will retrieve the current existing OPC UA settings for license key, server name and server port from the connected Gateway.



DOWNLOAD AND RESTART OPC UA

When all configuration are prepared, click Download to upload the configuration to the Gateway. A dialog message will be shown upon completed download, to make a restart of OPC UA application in Gateway.
Manual restart can also be done with Restart OPC UA button.
After restart, the application will take some time to start-up and build the OPC UA data model and connection certificates. During this time, it might not be possible to connect with any OPC UA client, but once the OPC UA server has started up completely, the OPC UA client may continue to connect again.

It may take up to 20 minutes to build OPC UA data model for 4000 alarm points.

CONNECT TO OPC UA Gateway

Depending on the OPC UA client software, the address for connection point can be copied and used in the client for easy connection to the OPCUAGateway server.
The OPCUAGateway server uses the same user credentials as EBLWeb configuration, i.e. Service personnel, Building Officer, Information only, and it is not allowed to connect with anonymous credentials.

When creating connection to OPC UA Gateway the OPC UA client might give warning that the certificate is untrusted. This is due to that the certificate in OPC UA Gateway is a self-issued certificate, and not created by any Certificate Authority. But, it should be possible to continue by selecting Accept the certificate or Ignore, depending on the OPC UA client.

6. TECHNICAL DATA

Hardware	Gateway 5088
Gateway software	EBLWeb 3.0.X, OPC UA Gateway 1.0.X
Software for PC / Server	EBLWin 3.0.X. , GatewayApplicationTool 1.0.X.
Configuration	
EBL-system	3.0.X
Operating system	Windows 10 Windows 11

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