

# BACeye

## MANUAL

*Visualisation and analysis of BACnet networks*

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# 1. Foreword

Thank you for using BACeye for visualisation and analysis of BACnet networks

**This manual describes the BACeye software**

## BACEYE

BACeye allows easy access to BACnet devices and their objects and properties. In addition, it offers the possibility of generating EDE files ('BACnet data point lists') and reading graphically displaying and exporting trend log data, among other things. Schedulers can also be clearly represented and modified. Typical BACeye applications include commissioning BACnet installations, analysis of observed problems and monitoring and operating BACnet devices.

**BACnet networks:** Using the BACnet Who-Is/I-Am services, devices in the network can be identified simply and a copy of the device properties and objects can be imported. A detailed display of all objects allows access to the object properties.

**Schedulers:** With BACeye, BACnet Calendar and Schedule objects can be comfortably displayed and modified. The weekly schedule and the exception schedule can be modified separately. The combined display provides an overview of the actual effective value.

**EDE files:** It is very easy to generate EDE files. An EDE file (Engineering Data Exchange) is a format for a BACnet data point list, specified by the BACnet Interest Group Europe (BIG-EU).

**Alarms:** Receive and display BACnet event notifications (error and operating messages). Confirm BACnet event notifications.

**Monitoring list:** The monitoring list shows the most important properties of selected objects. Objects can be compiled from the same device or from different devices.

**Trend data:** Read trend data. Display trend data as a curve or as a list.

### Additional features/supported functions

- Modify values in the BACnet properties
- Zoom: Individual object properties are displayed in large type in a separate window (full screen) and are dynamically updated. This allows changes in the properties to be observed on the screen from great distances.
- Backup/restore: BACeye can perform BACnet backup and restore. This allows data to be backed up and restored on BACnet devices.
- BACnet interface: The BACnet network connection is provided by TCP/IP. This requires a LAN or WLAN connection between the network and the BACnet devices. The BACnet UDP port settings can be changed. BACeye supports the
- "ForeignDevice" (FD) function for coupling to an existing BBMD.

More information on BACeye is available at: <http://www.baceye.com>

## 2. COPYRIGHT & Contact Information

### COPYRIGHT

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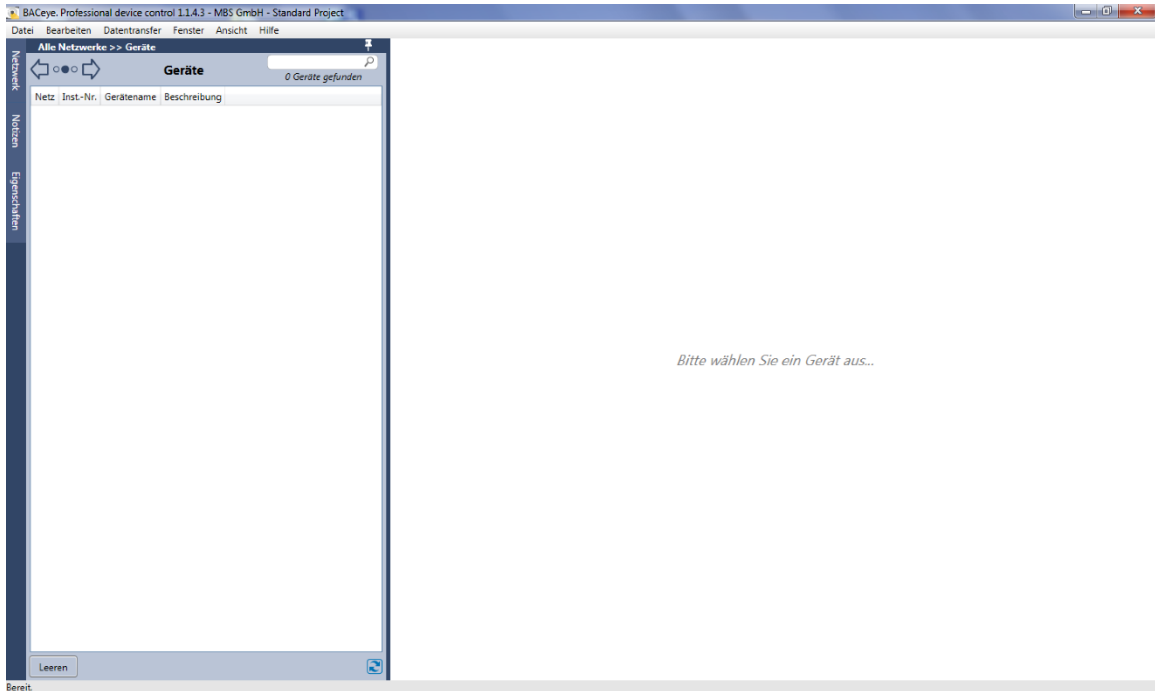
<http://www.baceye.com>

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### 3. After starting

After starting BACeye the primary BACnet Explorer user interface appears.



The left part of the window contains the device list, the right section the object list of any device selected.

The network is not automatically scanned when BACeye is started. This prevents any unintended loads in the network. However, if an automatic scan is desired when the program starts, the default behaviour of BACeye can be defined in "Settings".

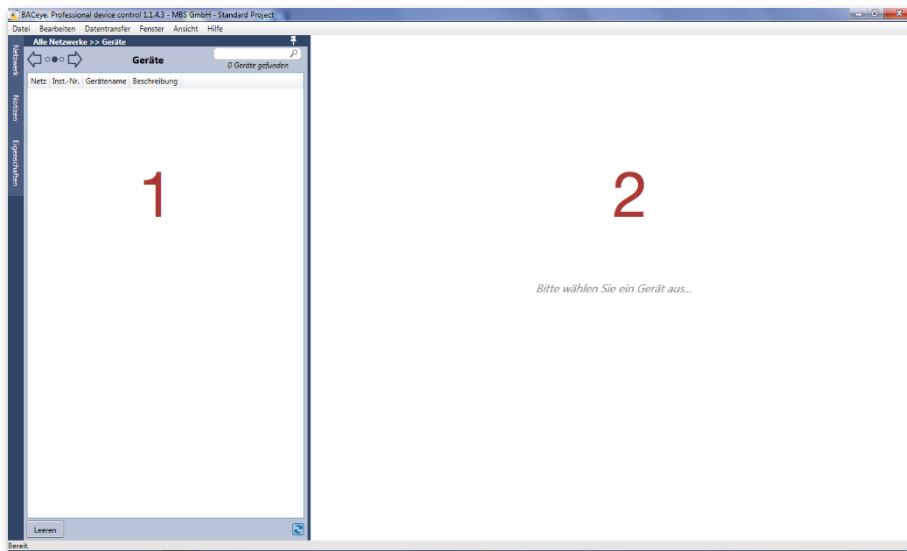


Pressing the "Refresh" button starts the network scan and BACnet communication.

## 4. Navigation

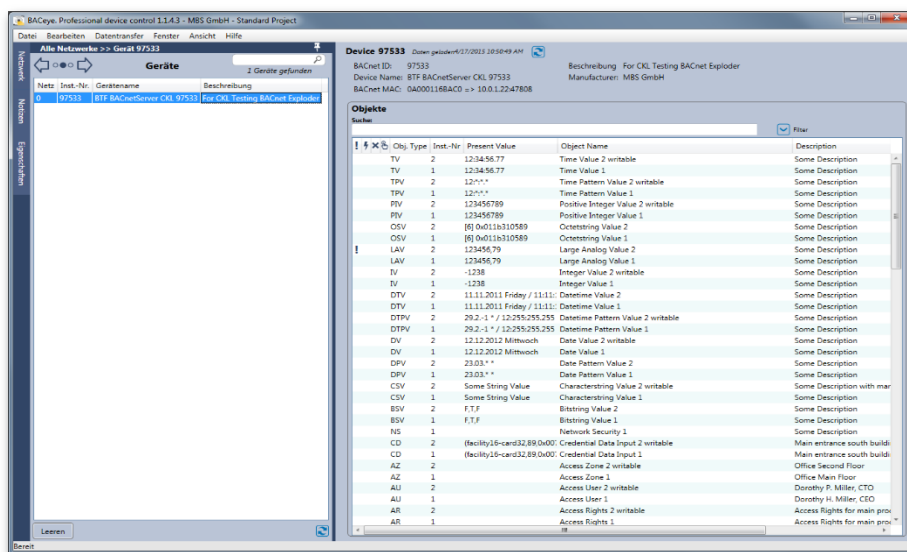
The BACeye user interface is divided up into two primary subsections.

1. Navigation window
2. Detail window



Both of these working areas can display different contents when working with BACeye, allowing convenient navigation through the data found.

The left area of the user interface shows the present top level entries. For example, after starting a network scan, these are the devices found. The entries in the left section can be marked to view the associated details in the detail window.



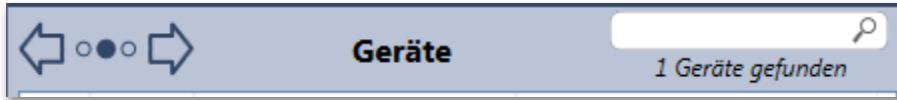
## 5. Navigation window

After starting the network scan, the device list shows all devices found in the navigation window. The network, instance number, device name and description are shown for each device. The device list can be sorted using the column heading.



## NAVIGATION

The BACeye navigation bar is located in the upper section of the navigation window. The actual navigation control with navigation indicator is located on the navigation bar.



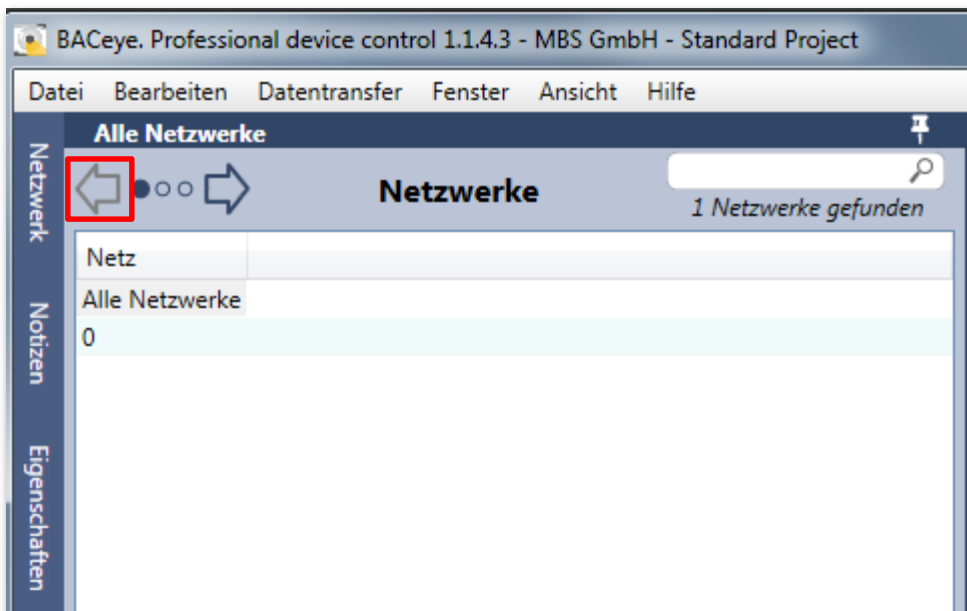
The navigation control has two cursors for navigation as well as a navigation indicator to mark the present position.

BACeye uses a three-stage navigation hierarchy:

1. Networks
2. Devices
3. Objects

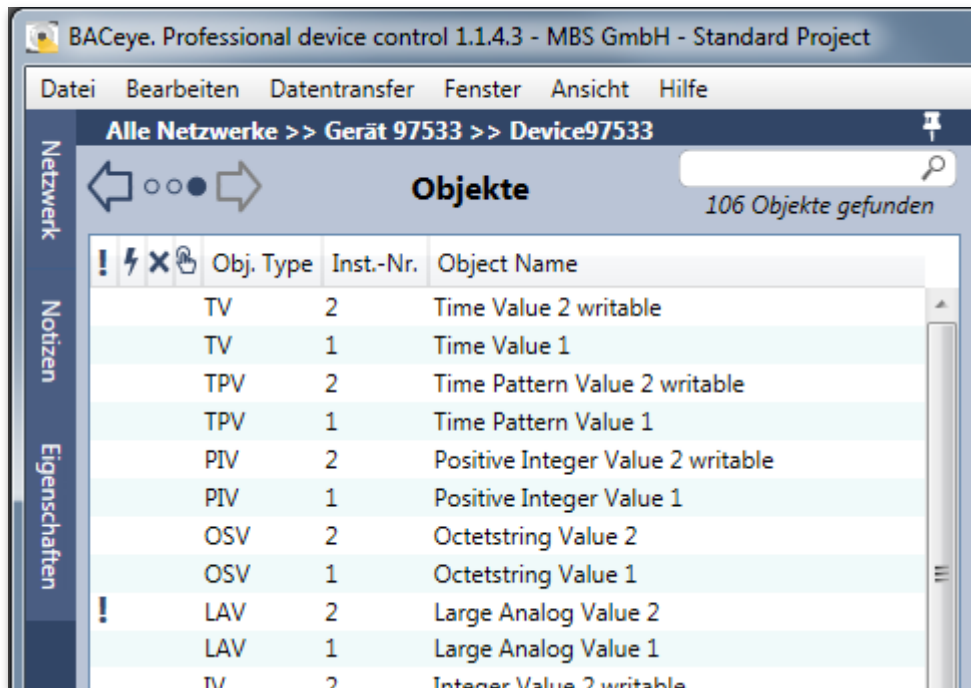
When BACeye is started the navigation is set to the "Device" level and displays all devices in the present BACnet networks.

Clicking the "Back" button navigates to the "Network" view.



In the network window all BACnet networks found are displayed together with the additional entry "All networks". When an entry is double-clicked BACeye navigates to the "Device" hierarchy level - using the desired selection. Here all devices matching the selection are then displayed.





When "Device" is double-clicked, BACeye navigates to the "Object" hierarchy level. BACeye displays all objects found in the selected device in the object list.

The object list displays:

- Alarm
- Fault
- OutOfService
- Overridden
- Object Type
- Instance Number
- Object Name

## DETAIL WINDOW

If an entry in the navigation window is clicked once, a detail window containing associated details appears in BACeye. Various details are shown depending on the hierarchy level selected in the navigation window. Double-clicking navigates to the next level in the hierarchy.

Navigation window	Detail window
Networks	Devices
Devices	Objects
Objects	Properties

## 6. Detail window

The detail window in BACeye shows the details on the specific entry selected in the navigation window.

Navigation window	Detail window
Networks	Devices
Devices	Objects
Objects	Properties

### NETWORKS

When the navigation window is set to the "Network" hierarchy level, the devices found in the network selected are listed in the detail window.

Netz	Inst.-Nr.	Gerätename	Beschreibung
0	97533	BTF BACnetServer CKL 97533	For CKL Testing BACnet Explorer

### DEVICES

When the navigation window is set to the "Device" hierarchy level, the objects found in the device selected are listed in the detail window. The object list can be sorted, searched and filtered by the user.

**Device 97533** Daten geladen 4/17/2015 10:50:49 AM

BACnet ID: 97533 Beschreibung: For CKL Testing BACnet Explorer  
 Device Name: BTF BACnetServer CKL 97533 Manufacturer: MBS GmbH  
 BACnet MAC: 0A000116BAC0 => 10.0.1.22:47808

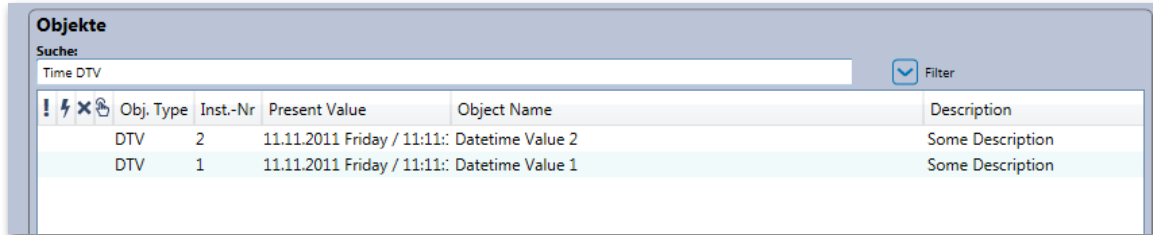
Obj. Type	Inst.-Nr	Present Value	Object Name	Description
NC	1		Notification Class 1	Notification Class
MO	2	Above_All	Multi State Output 2 writable	Multi State Output with ma
MO	1	Off	Multi State Output 1	Multi State Output
PR	2		Program 2 writable	Average of Somethings
PR	1		Program 1	Average of Somethings
NC	2		Notification Class 2 writable	Notification Class
LP	1	0,00	Loop 1	LOOP
GRP	2	(((analog-output,1),((85,-[	Group 2 writable	Group with many propertie
GRP	1	(((analog-output,3),((85,-[	Group 1	Group
MI	2	Off	Multi State Input 2 writable	Multi State Input

## Sorting

Sorting is possible by "Clicking" on the specific column heading.

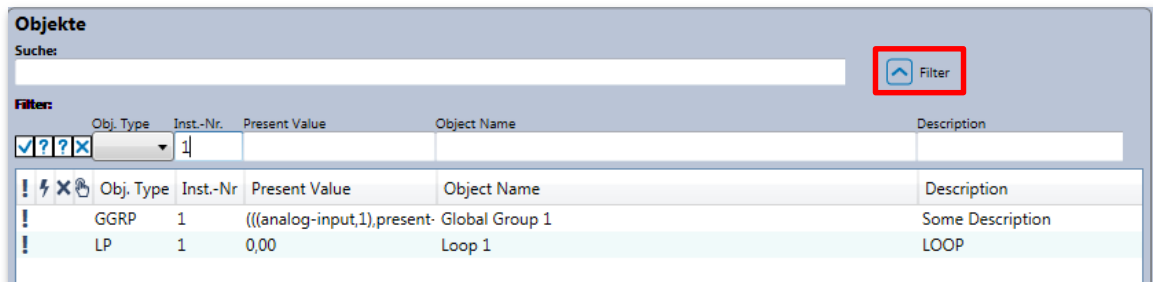
## Search

When text is entered in the "Search" field, BACeye performs a full text search. All columns displayed are searched - individual search terms can be entered separated by spaces. If a number of terms are separated from one another in this manner, BACeye displays those lines with ALL search terms.



## Filter

The "Filter" button allows display of additional control elements and filtering with the result list.



A filter remains active until the control element is suppressed by actuating the button again.

Any column displayed can be filtered with the BACeye filter. Various methods are used depending on the type of column.

## Status flags

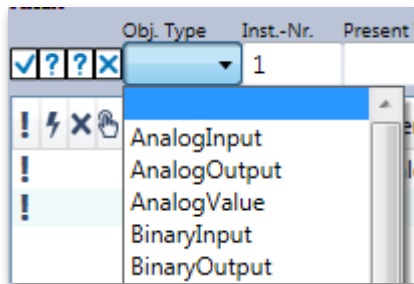


A checkbox allows the status flags "Alarm", "Fault", "OutOfService" and Overridden to be filtered for three states.

Each checkbox shows one of three possible symbols:

- **Check** - Filter requires presence of attribute.  
Only those lines are shown, for which the specific status flag is set.
- **Question mark** - Filter considers attribute to be neutral.  
All lines are shown, regardless of whether the specific status flag is set.
- **X** - Filter requires absence of attribute.  
Only those lines are shown, for which the specific status flag is NOT set.

## Object type



The object type can be filtered using a selection list. The list includes all possible types of objects.

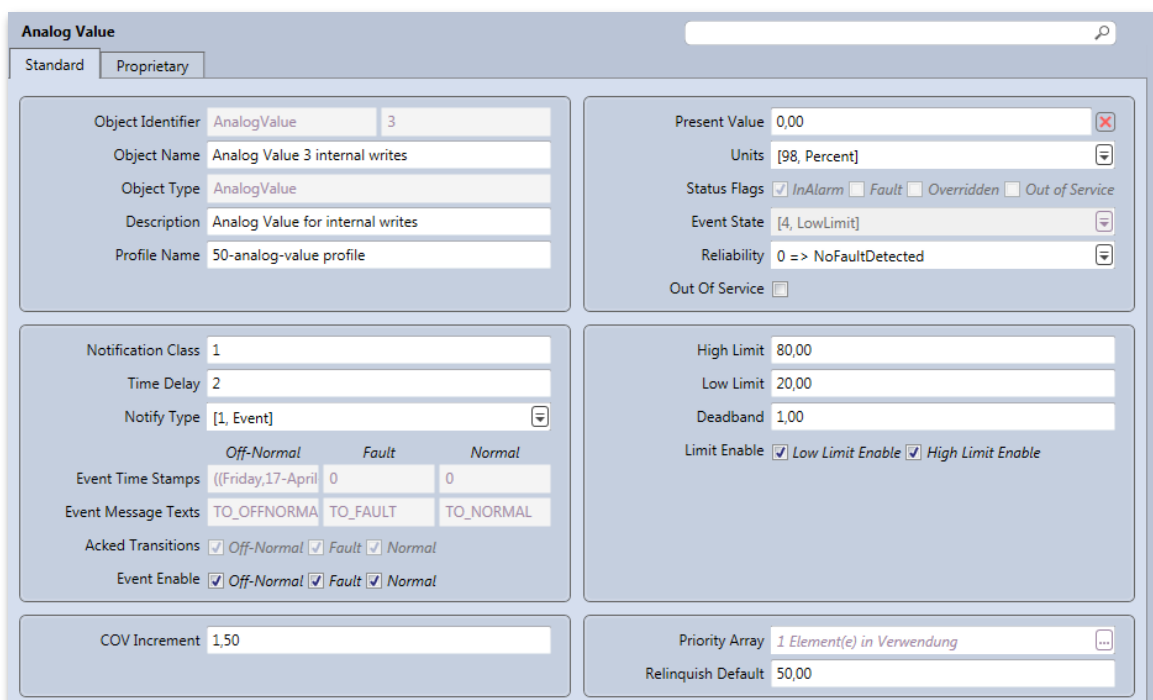
## Inst No, Present Value, Object Name, Description

All other fields are filtered using a text entry. All lines are shown containing the text in full or in part.

## OBJECTS

If the navigation window is set to the "Object" hierarchy level, the properties of the selected object are displayed in the detail window.

BACeye displays all properties of an object possible according to BACnet standard in the detail window. The individual properties are consolidated to logical groups and always displayed. If an object does not implement all optional properties, those not implemented are displayed in grey with a line through them. This clearly shows the user that the object could use this property, even though it is not presently in use.



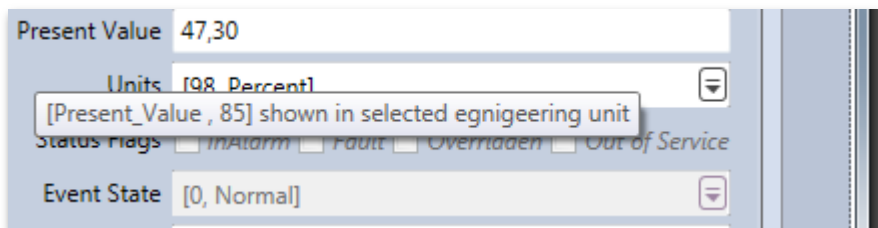
## Search for properties

BACeye also has a search feature for objects in the detail window. This search feature allows the user to find a certain property quickly in the detail window.

After entering a search term, BACeye marks all properties found containing the search term.

## Tool tips

If the user moves the mouse pointer over the name of a certain property, BACeye shows the associated tool tip text.

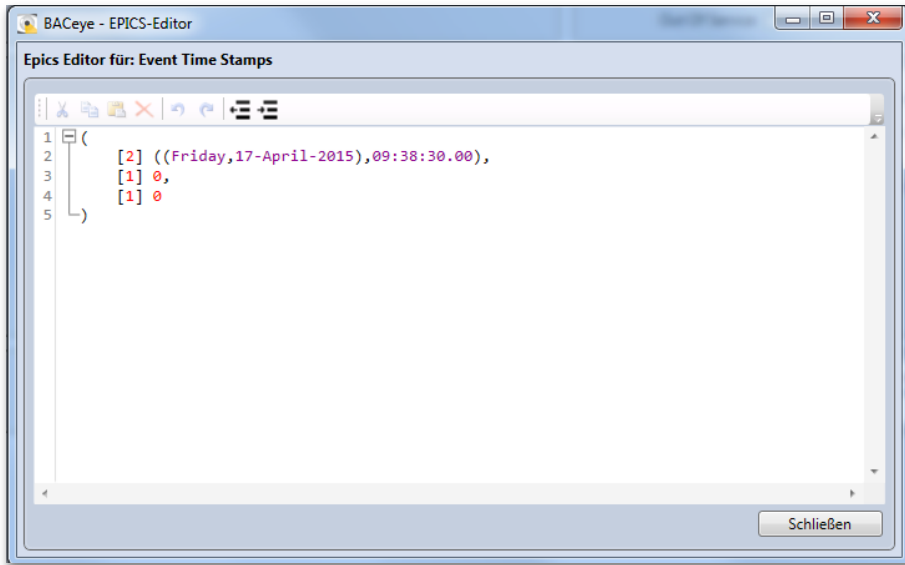


The tool tip consists of the name of the property, followed by the property ID and, where applicable, further information (e.g. associated units).

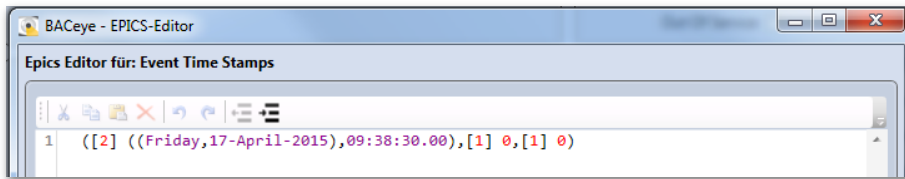
## EPICS display

The value of a property can be called in EPICS display. For this purpose it is only necessary for the user to move the mouse cursor to the desired value and select it in the "EPICS Display" context menu.

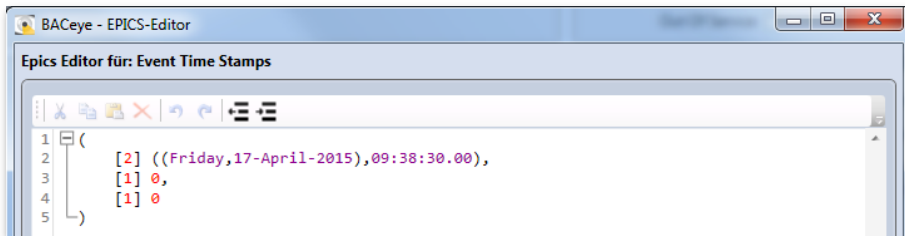
If the type of data displayed is a complex type, the EPICS string can be scrolled using the EPICS editor to obtain better depiction. When the editor is called the first level of a complex data type is opened.



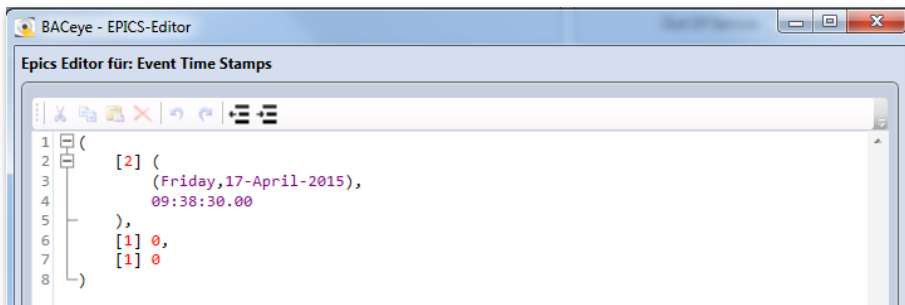
Example:



Level 0:



Level 1:



Level 2:

## Writing values

With BACeye it is possible to write as well as read values. A number of object properties can be changed simultaneously. If properties are changed, BACeye displays the name of the property in bold face. All properties displayed in bold face are written by BACeye in the order changed.

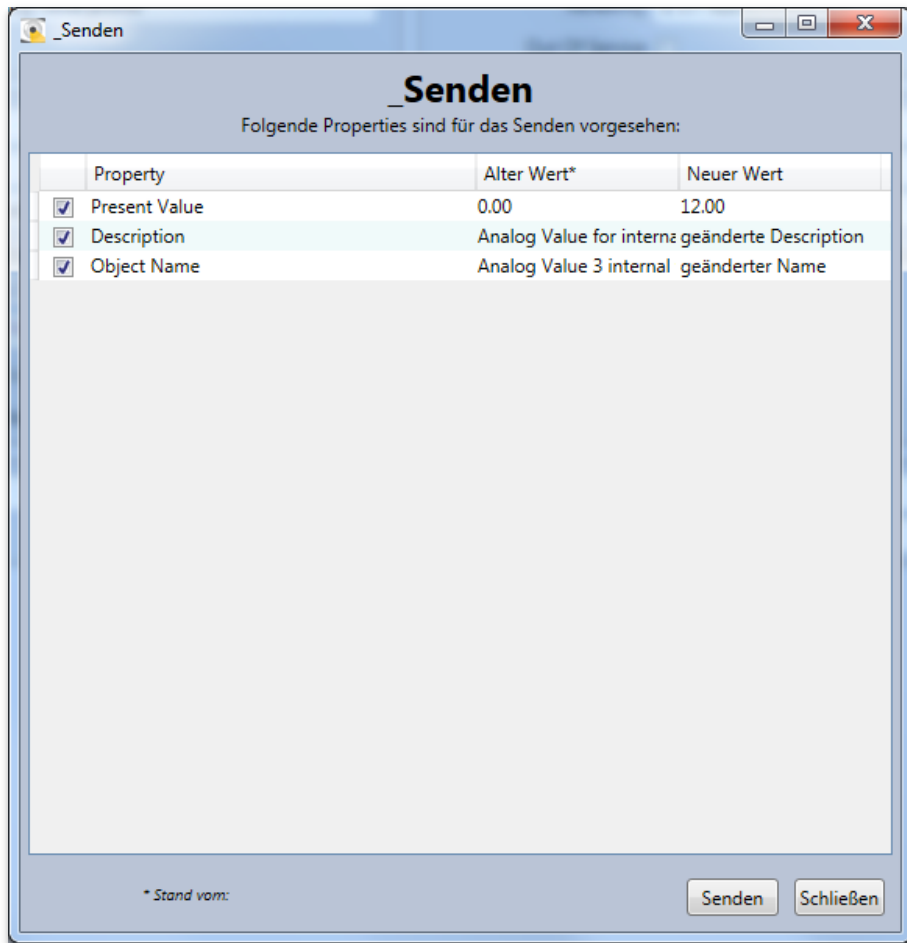
The screenshot shows the 'Analog Value' configuration window. The 'Standard' tab is active, showing fields for Object Identifier, Object Name, Object Type, Description, and Profile Name. The 'Proprietary' tab shows Present Value, Units, Status Flags, Event State, Reliability, and Out Of Service. The bottom control bar includes a 'Senden' button and a 'Write Priority' dropdown menu.

The write command can be actuated on the control bar at the bottom edge of the detail window. In the case of commandable objects, BACeye writes with a priority set by the user.

The screenshot shows the 'Write Priority' dropdown menu. The menu is open, displaying a list of priority options. The selected option is [8, ManualOperator (8)].

The standard priority is "8 - ManualOperator". The priority can be changed in the "Write Priority" selection list. According to the BACnet standard, priority "6" is reserved and cannot be used for write commands.

The actual write operation can be initiated with the "Send" button. With the default setting, BACeye opens another interactive window when the "Send" button is clicked.

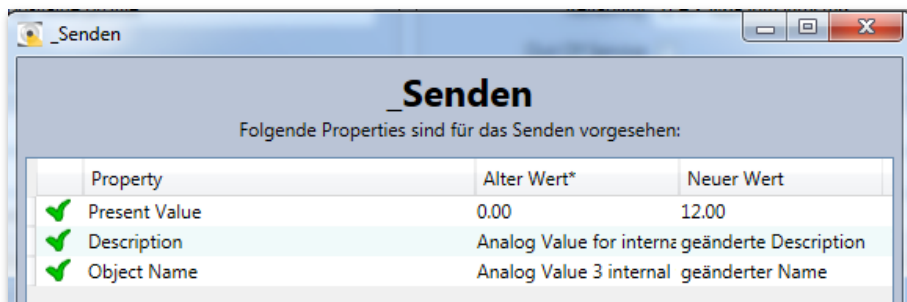


In this interactive window all properties are displayed with the old and new value BACeye intends to write.

At this point it is possible for the user to deselect individual properties and not yet write them. If properties are deselected, the changes made are not lost; they remain available for a further write process.

### Successful send process

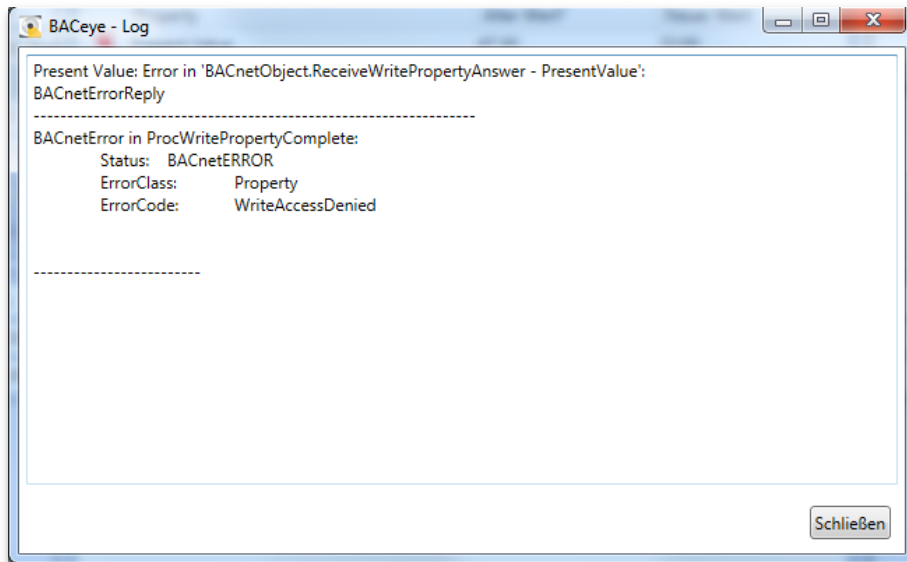
If the send process was successful, each successfully sent property is marked accordingly. BACeye reads the changed values back in so that the detail view represents the current value status.





### Unsuccessful send process

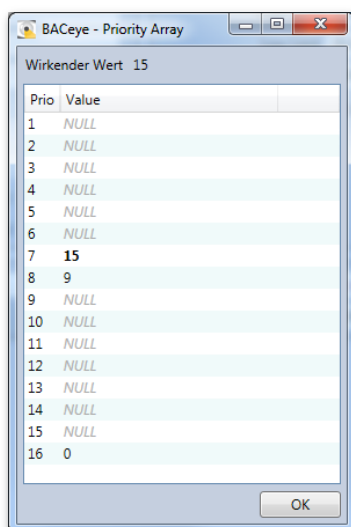
If the send process for a property is not successful, BACeye identifies the property with a negative marking. An unsuccessful send operation for a property does not have any direct effect on the send process for other properties. It is possible to use the "Log" button to find out the reason why the send operation was not successful. The transmission log can be called with the "Log" button to obtain further information on the problem which has occurred.



### Writing commandable objects

If object properties are written, which can have a PriorityArray, it is possible that a value with higher priority than that to be written is already effective.

Example:

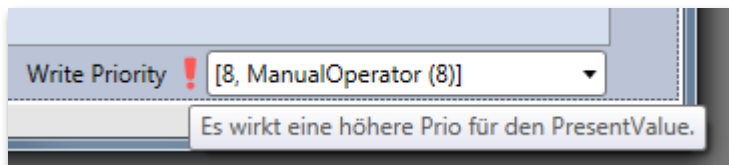


The PriorityArray already contains a number of entries. The interactive value window for the PriorityArray indicates that three values are present in the PriorityArray:

- [7 :15]
- [8 : 9]
- [16: 0]

If the PresentValue is to be changed again, BACeye writes with a standard priority of 8. This would result in the new value being written into the PriorityArray, even though it would not be effective as the PresentValue, because a value of 15 is already effective with a higher priority of 7.

To draw attention to this situation, BACeye marks it with a red exclamation mark in the send list.



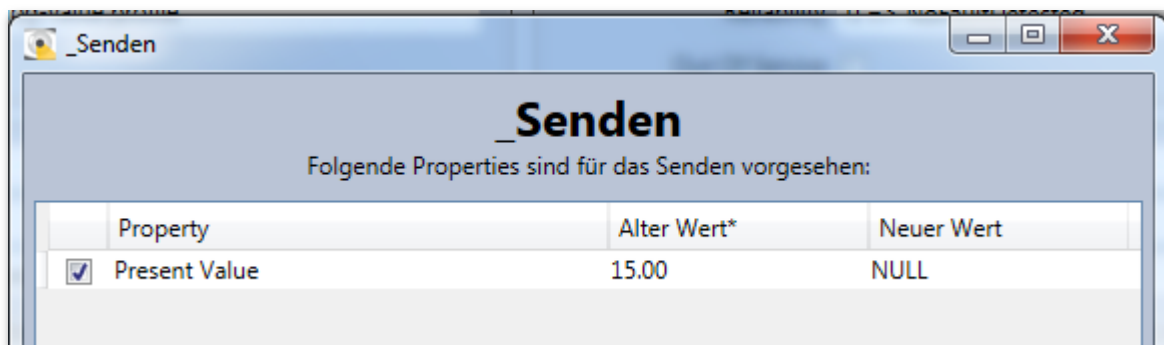
#### Cancellation of effects - deleting PriorityArray entries

The "Delete" button for the PresentValue field can be used to cancel an effect or delete a certain field in a PriorityArray.



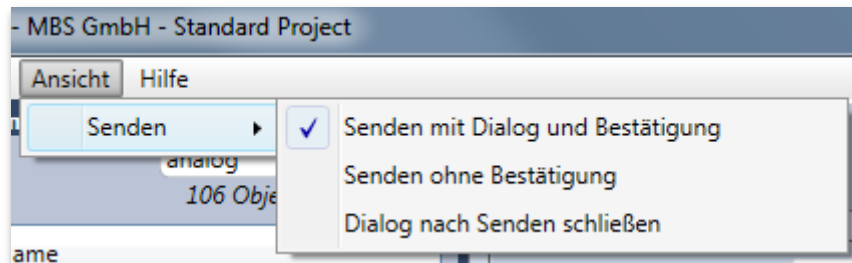
A button with red "X" is present following the PresentValue field for objects with PriorityArray.

Actuating this button causes the value ZERO to be written for the set priority for the PresentValue during the next write operation.



## Configuring send properties

With the default setting, the properties can be checked and deselected in the interactive "Send" window during each send operation.



You can change this by selecting other send properties in the "View" menu.

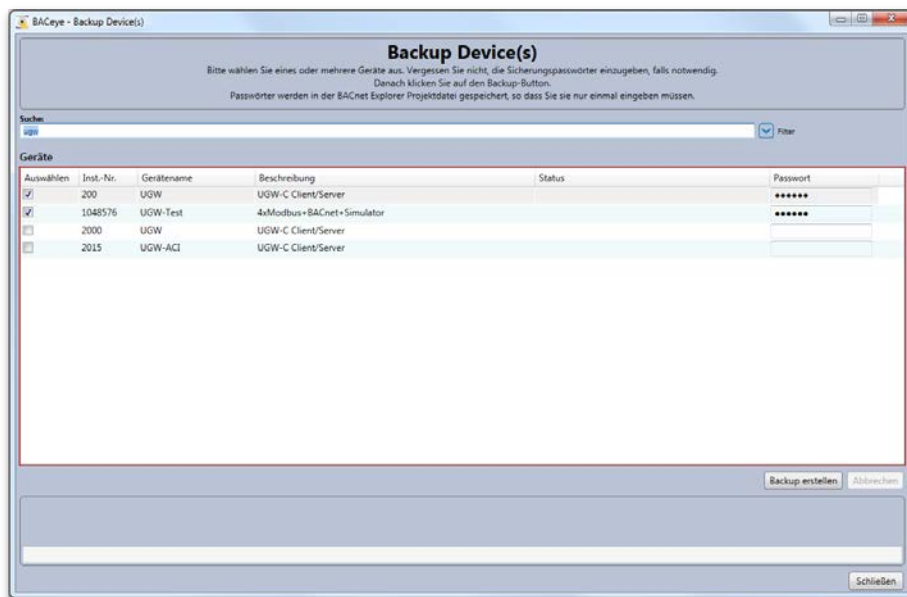
- **Send with interactive window and confirmation:** This is the default mode. The interactive send window opens before sending. In the interactive window the values can be checked again before selecting send. After sending, the interactive window remains open displaying the send results.
- **Send without confirmation:** The interactive send window opens and sends all changes without reconfirmation. After sending, the interactive window remains open.
- **Interactive window closes after sending:** The interactive window is opened, sends the values and is then closed automatically when all send operations were successful. If errors occurred during sending, the interactive window remains open.

### Send with hotkey

Changed values can also be sent using the hotkey combination ALT+S This can save a great deal of time depending on the configuration of the interactive send window. This mode is particularly practical in combination with "Close window after sending".

## 7. BACKUP & RESTORE

The BACnet Backup&Restore procedure serves for backing up the data in one of the devices or loading an existing data backup into a device. BACeye can serve as a backup and restore client on BACnet devices. The procedure is defined in the BACnet standard. The content of the backup is, however, the sole responsibility of the device manufacturer. The precise scope of the restore is also the responsibility of the device manufacturer. BACeye simply relays the data, however cannot interpret or modify it.



The interactive backup window can be started with the menu point **<Data transfer><Backup>**. The BACnet devices recognised are then displayed in this interactive window. One line is displayed per device with the columns: Instance No., Device name and Description. When a large number of devices exist in one system, it may not be expedient to show all devices simultaneously. A text search field allows filtering of the devices to be shown. Moreover a special filter line can be folded down by clicking the symbol next to "Filter" at the top right. Filters can be entered selectively for each column in this line. The first column in the device list contains check boxes for selecting the devices to be backed up. The password required for backup of certain devices is given in the Password column. The backup process for the selected devices can be started with the **<Backup>** button. First it is necessary to select the name for the backup file to be created using an interactive file selection window. The resulting file is specifically for BACeye. BACnet backup does not have a general exchange format allowing general exchange of backup files between different clients. The file serves for restoring this data with BACeye. A brief description of the data structure is given below in the event that a user does need to review the contents of the file. This format may change in later versions of BACeye; this description is provided for information only. The backup file consists of a ZIP archive. The archive contains one directory for each device backed up. The directory for each device contains one file with data per file object, which is a part of the backup, as well as an xml file containing general information.

## 8. PROPERTIES

The properties of BACeye can be selected on the "Properties" tab next to the navigation window. The Properties tab provides access to all BACeye settings.

The screenshot shows the 'Eigenschaften' (Properties) dialog box for a network adapter. The window title is 'Eigenschaften' and it has a menu bar with 'Datei', 'Bearbeiten', 'Datentransfer', 'Fenster', 'Ansicht', and 'Hilfe'. On the left, there is a vertical navigation pane with 'Netzwerk', 'Notizen', and 'Eigenschaften' (selected). The main area shows various settings for a network adapter. At the bottom, there is a 'Speichern' button and a label 'BACeye - Device Objekt'.

Property	Value
Netzwerkadapter	{10.0.1.26} LAN-Verbindung (Intel(R) PRO/1000 MT-Netzwerkverbindung)
Netznummer	1
UDP Port	47808
Foreign Device	<input type="checkbox"/>
BBMD Adresse	
FD Port	
FD Time-to-live	
Netzwerkscan von	* bis *
Netzwerkscan Timeout	3
Nachkommastellen	2
ReadPropertyMultiple aktivieren	<input type="checkbox"/>
Starte Netzwerkscan bei Programmstart	<input type="checkbox"/>
Statische Geräte-Adressen-Zuordnung verwenden	<input type="checkbox"/> Statische Geräte-Adressen-Zuordnung
COV verwenden	<input checked="" type="checkbox"/>
Polling-Intervall Watchlist (sec)	60
Polling-Intervall Zoom (sec)	60
Priorität WriteProperty	ManualOperator (8)
Device-Id in Recipientlist verwenden	<input type="checkbox"/>
Max. Anzahl Einträge Event-Notifications	20000

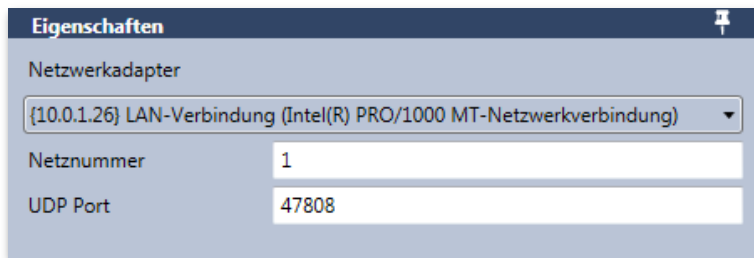
BACeye - Device Objekt

Speichern

## NETWORK SETTINGS

BACeye offers the possibility of selecting a certain network card in the network settings area, In combination with the network card, network numbers for the BACnet network as well as the UDP port for BACnet communication are specified

When BACnet communication is started, BACeye indicates whether the combination of network adapter + UDP port is already linked elsewhere (e.g. MBS BACnet OPC server). In this case it is necessary to terminate the second BACstack or select a different network adapter+port combination.



Eigenschaften	
Netzwerkadapter	{10.0.1.26} LAN-Verbindung (Intel(R) PRO/1000 MT-Netzwerkverbindung)
Netznummer	1
UDP Port	47808

## FOREIGN DEVICE

BACeye can be configured as FD in a BACnet network in the "Foreign Device" section. The configuration can be activated or deactivated in the "Foreign Device" checkbox.



Foreign Device	<input type="checkbox"/>
BBMD Adresse	
FD Port	
FD Time-to-live	

For configuration give the address of the BBMD in the network as well as the FD port and time at which the FD is to be unregistered.

## NETWORK SCAN

The "Network scan" section allows entry of the BACeye range to be scanned. The range comprises the valid BACnet address range.

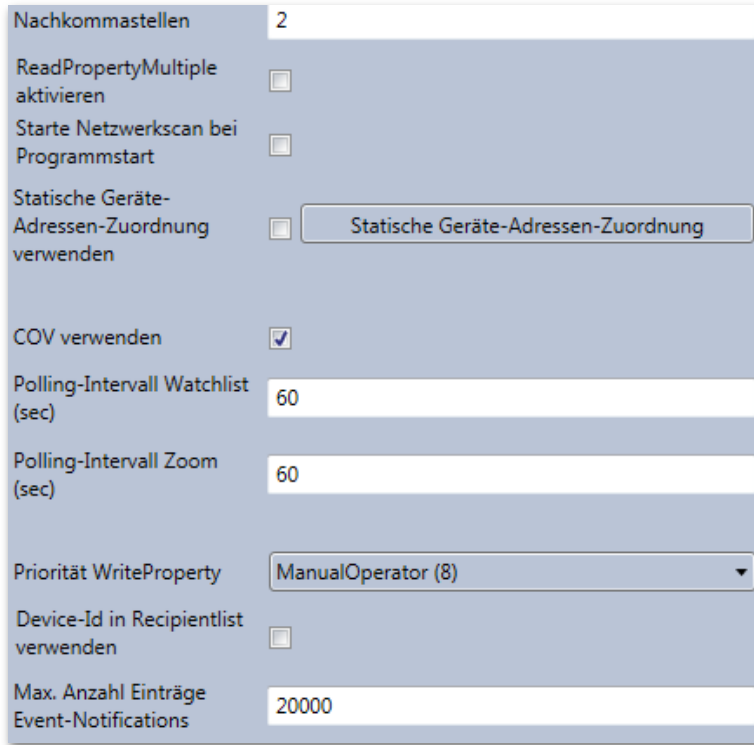


Netzwerkscan von	*    bis    *
Netzwerkscan Timeout	3

Both ranges can be expanded to the maximum range with a wild card "\*". When entry of a range is required, BACeye outputs appropriate WHO\_IS queries. BACeye uses a multiple stage process to reach the maximum number of subscribers possible. After polling the entire range, BACeye waits a certain time and then polls specifically the ranges between the devices which have replied. This process is repeated a number of times.

## COMMUNICATION SETTINGS

Basic settings for BACeye can be made in the communication settings.



The screenshot shows a settings dialog box with the following fields and options:

- Nachkommastellen: 2
- ReadPropertyMultiple aktivieren:
- Starte Netzwerkscan bei Programmstart:
- Statische Geräte-Adressen-Zuordnung verwenden:  (with a button labeled "Statische Geräte-Adressen-Zuordnung")
- COV verwenden:
- Polling-Intervall Watchlist (sec): 60
- Polling-Intervall Zoom (sec): 60
- Priorität WriteProperty: ManualOperator (8) (dropdown menu)
- Device-Id in Recipientlist verwenden:
- Max. Anzahl Einträge Event-Notifications: 20000

### Significant digits

This defines the number of significant digits with which BACeye is to operate. The default setting is two. All analogue values are represented in this form.

### Activating ReadPropertyMultiple (RPM)

If the "Activate RPM" checkbox is marked, BACeye polls devices using RPM to the extent supported by the devices. This checkbox can be deactivated, if use RPM is not desired for analysis purposes. BACeye then polls the properties of all devices individually. BACeye also has a fallback process. If a device generally supports RPM and a call fails (e.g. data quantity too large), BACeye falls back to reading the individual properties for this device.

### Start network scan on program start

BACnet communication is not accomplished initially when BACeye is started. BACnet communication starts only when the network scan is actuated by the user. This was implemented to prevent unintentional disruptions in slow networks - this operation can be overridden with the checkbox. When the checkbox is checked, BACeye starts BACnet communication automatically after starting and actuates a BACnet scan of the set range.

### Static device address binding

The static device address binding can be activated here. Details are given in the Chapter "Static Device Address Binding"

### Using COV

BACeye offers a number of possibilities for monitoring changes in the values of properties. Individual properties can be monitored with the zoom window (see Chapter "Zoom Window") or complete objects can be monitored in the watch list (See Chapter "Watch List") If supported, BACeye uses COV or COV-P for monitoring properties. If COV is not supported the values are polled by BACeye. The COV checkbox allows the user to set whether BACeye should attempt to receive value changes via COV or generally use the polling procedure.

#### **Polling interval for watchlist**

Here it is possible to set the interval values for polling when objects are added to the watchlist.

#### **Polling interval for zoom window**

Here it is possible to set the interval values for polling when they are observed in a zoom window. If the property to be observed is already on the watchlist, the watchlist interval is effective. The property is not polled multiply.

#### **WriteProperty priority**

Setting for standard BACeye priority for writing the PresentValue property for commandable objects. The default value is "8 - ManualOperator".

#### **Using device ID in recipient list**

BACeye usually enters itself in the recipient list for objects using the network number+BACnet MAC address. If this checkbox is activated, BACeye enters itself in the recipient list with the DeviceID instead.

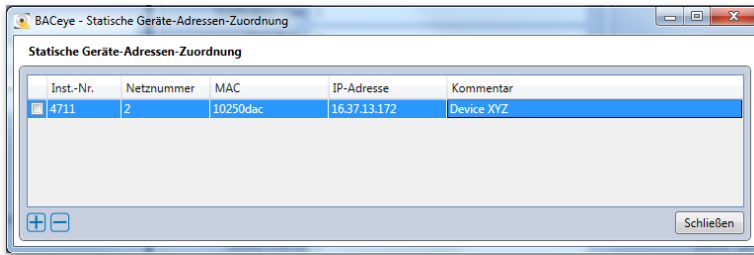
#### **Max number of event notifications**

If BACeye is entered in the recipient list, event notifications are collected and buffered. This entry indicates the maximum number of notifications to be buffered before older events are deleted from the memory.

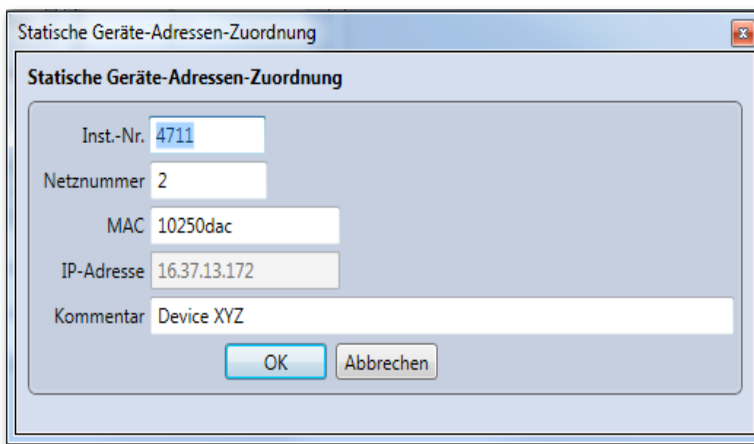
## **STATIC DEVICE ADDRESS BINDING**

Normally BACeye finds BACnet devices using so-called "dynamic device address binding". This means BACeye sends a "Who Is" telegram as broadcast and devices reply with an "I Am" telegram. These replies allow BACeye to recognise the devices present in the network and the addresses under which the devices can be reached. However there are some situations, where this mechanism is not sufficient. Some devices, particularly MS/TP slaves, do not support "I Am". Moreover transfer of broadcast telegrams can be disrupted. This happens particularly when BBMD devices are not completely installed in a BACnet IP network with different IP subnetworks. As an option BACeye also supports so-called "static device address binding" to successfully communicate with devices even in such special situations. In this case the devices are made identifiable for BACeye by means of manual configuration with their addresses. For further BACeye functions, the devices entered using static device address binding behave in the same manner as devices which have been found automatically by means of dynamic device address binding. Configuration for static device address binding is possible using the interactive "static device address binding" window, which can be called on the "Properties" tab.



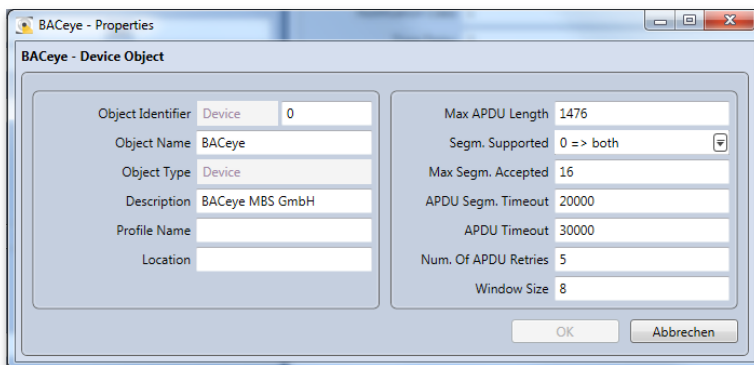


Entries can be added or removed with the "+" and "-" buttons. Present entries can be edited by double-clicking on the line in question. After completing entries, they can be activated individually in the list. All activated entries become effective at the moment they are activated in the "Static device address binding" checkbox on the Settings tab. This means that it is not necessary to delete entries when not required temporarily; they can simply be deactivated.



## BACEYE DEVICE OBJECT

The interactive "BACeye device object" window allows the settings to be edited for the device object with which BACeye identifies itself to other subscribers.



The most important settings for the device object can be made in the interactive window:

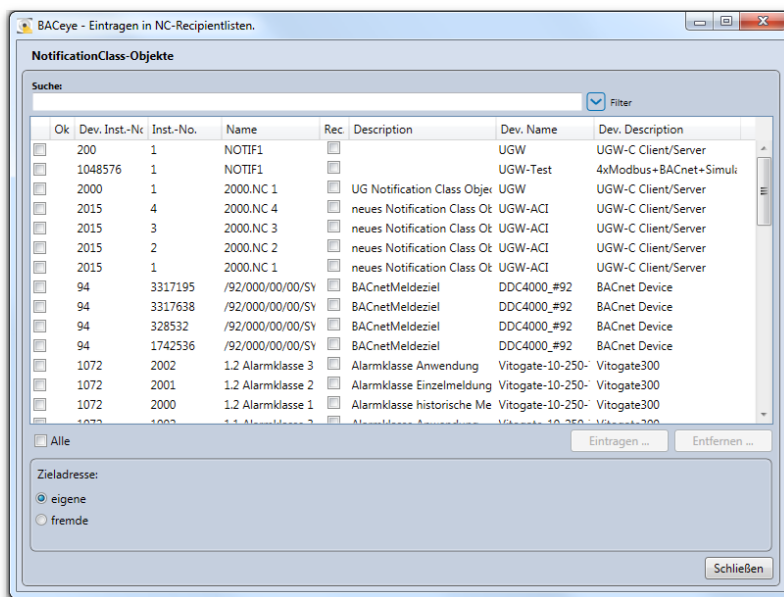
- **Object Identifier:** Instance number of own device object
- **Object Name:** Name of own device object
- **Object Type:** Type of own device object
- **Description:** Description of own device object
- **Profile Name:** Text field for setting profile name. This property is used to document that the device in question is set according to a defined pattern. This setting does not have any particular relevance for BACeye.
- **Location:** Location is a text property serving to document the installation location of the device. Other BACnet clients in the network can be informed where the BACeye device is located with the aid of this property.
- **Max APDU Length:** Maximum number of bytes, BACeye is to support in one telegram. Generally this is set to the maximum supported by all connected BACnet networks. Usually values of 1476 are used when only BACnet IP is used and 480 when the BACnet network also contains MS/TP devices.
- **Segm. Supported:** It is possible to set whether BACeye is to support segmented transfer.
- **Max Segm. Accepted:** The maximum number of segments is configured which BACeye is to support in the event of segmented transfer. Values between 1 and 255 are permissible. It is rarely necessary to change the default value of 16.
- **APDU Segm. Timeout:** Time BACeye is to wait for a segment before retrying. This value is expressed in milliseconds. The default value of 2000 therefore corresponds to 2 seconds. It may be necessary to increase this value if the BACnet network is very slow or contains overloaded subnetworks or very slow devices.
- **Num. Of APDU Retries:** Number of retries to be attempted by BACeye when the device does not reply to the poll.
- **Window Size:** Number of segments to be received during segmented transfer before sending a confirmation. Only in very rare cases is it necessary to change the default setting of 8.

## 9. ALARMING

BACnet has mechanisms which can evaluate and recognise the device alarm states automatically and transfer this information on to clients accordingly in the form of EventNotifications. BACeye supports this BACnet feature as client.

### ENTRY IN RECIPIENT LIST

NotificationClass objects serve for determining which client a server sends an EventNotification. Each of these NotificationClass objects has a property recipient list containing a list of target addresses and sending criteria. BACeye receives EventNotifications only from those NotificationClass objects for which the BACeye address or a matching broadcast address is projected in the property recipient list. This recipient list can be processed in BACeye on the one hand fully normally with the edit and send functions from the interactive windows for editing NotificationClass objects. However there are also special convenience features for which BACeye determines all NotificationClass objects in question and then enters its own address selectively in a number of recipient lists.



The interactive window for this convenience feature can be started with the menu point **<Edit><Enter BACeye in Recipient Lists>**. When the interactive window is opened BACeye first reads all NotificationClass objects out of all identified devices and then displays the objects in one of its lists. Readout can require some time. This list is filled successively and a progress bar is shown at the bottom right as long as readout is not yet completed. Then objects can be selected for editing in the first column. After pressing the **<Enter>** button, BACeye adds an entry with its own address in the recipient list of all marked objects. On the other hand pressing the **<Delete>** button causes BACeye to delete an entry with its own address in all marked objects.

## DISPLAY OF MESSAGES RECEIVED

The menu **<Window><Display Event Notifications>** allows an interactive window to be opened containing the list of all alarms and events received. Each line in this list represents one EventNotification.

Empfangen	Zeitstempel	Device-ID	Obj.-Typ	Inst.-Nr	N.-Class	Notify-Typ	Event-Typ	Von Status	Nach Status	Priorität	Ack	Nachricht
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1000	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1010	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1020	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1030	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1040	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1050	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1060	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1070	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1080	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:53	(Wednesday,29-April-2015),13:49:34.00	1048576	BI	1090	1	Event	ChangeOfState	Normal	OffNormal	13	<input type="checkbox"/>	
29.04.2015 13:47:54	(Wednesday,29-April-2015),13:47:54.00	94	TLOG	234574	328532	Event	BufferReady	Normal	Normal	128	<input checked="" type="checkbox"/>	Trend Log - Daten bereit
29.04.2015 13:47:55	(Wednesday,29-April-2015),13:47:55.00	94	TLOG	235438	328532	Event	BufferReady	Normal	Normal	128	<input checked="" type="checkbox"/>	Trend Log - Daten bereit
29.04.2015 13:47:55	(Wednesday,29-April-2015),13:47:54.00	95	TLOG	1840865	328532	Event	BufferReady	Normal	Normal	128	<input checked="" type="checkbox"/>	Trend Log - Daten bereit
29.04.2015 13:47:56	(Wednesday,29-April-2015),13:47:57.00	93	TLOG	232258	328532	Event	BufferReady	Normal	Normal	128	<input checked="" type="checkbox"/>	Trend Log - Daten bereit
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:47:58.00	93	TLOG	235522	328532	Event	BufferReady	Normal	Normal	128	<input checked="" type="checkbox"/>	Trend Log - Daten bereit
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1000	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1010	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1020	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1030	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1040	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1050	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1060	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1070	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	
29.04.2015 13:47:58	(Wednesday,29-April-2015),13:49:39.00	1048576	BI	1080	1	Event	ChangeOfState	OffNormal	Normal	13	<input type="checkbox"/>	

An optional feature allows the list to be updated dynamically. This option can be activated with the **<Update>** checkbox. It may be expedient to switch off the update feature when, for example, the user wants to find or review data already received. In such cases updating could be distracting if the events being reviewed are changed. This setting does not affect collecting Event Notifications received in the background. The list displayed can be filtered with a clear text search. If a text is entered in the text field under **<Search>** only those lines are displayed containing this text in one of the notification fields. The list can also be filtered according to column content. When the **<Filter>** symbol at the top right is clicked, an additional line appears in which a filter criterion can be selected for each column in the list. Only lines satisfying the filter criteria are displayed. Clicking the **<Filter>** symbol again causes the filter line to fold back up. The filter is then no longer effective. However the criteria set are retained. Double-clicking on a line in the list view opens an interactive detail window for this specific EventNotification.

The event notifications received can be saved for further processing externally or archived as files in xml format. The save function can be actuated with the **<Save>** button in the interactive window displaying the list of

event notifications. The interactive file selection window then allows the user to enter the destination for saving the data. The filter set is effective during the save operation.

## CONFIRMATION OF MESSAGES

BACnet offers the option of managing confirmations for alarm and event notifications - BACeye can send such confirmations. When the "AckRequired" flag is set, a confirmation can be sent to the device from the interactive detail window with the **<Confirm>** button. Confirmation details are generated automatically by BACeye.

Marked messages can be deleted from the list in the BACeye memory with the button **<Delete marked elements from list>**. In this case the EventNotifications are deleted only from the list in the main BACeye memory. There is no retroactive effect on the system whatsoever. Normally it is not necessary to delete these entries; this feature serves only for removing messages which disturb an overview.