WAGO I/O SYSTEM 750

Libraries for Building Automation

Function Blocks and Data Types for the BACnet 750-830 Controller

Last Update: 07.08.2009

WAGO® INNOVATIVE CONNECTIONS

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WAGO-I/O-PRO CAA Library for the BACnet 750-830 Controller

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Important Notes

To ensure quick installation and start-up of the units, we strongly recommend that the following information and explanations are carefully read and adhered to.

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For each individual application, the components are supplied from the factory with a dedicated hardware and software configuration. Modifications are only admitted within the framework of the possibilities documented in this document. All other changes to the hardware and/or software and the non-conforming use of the components entail the exclusion of liability on part of WAGO Kontakttechnik GmbH & Co. KG.

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Scope of Validity

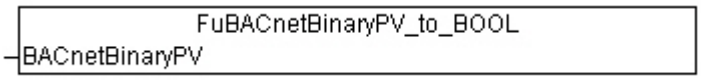
This application note is based on the stated hardware and software of the specific manufacturer as well as the associated documentation. This application note is therefore only valid for the described installation. New hardware and software versions may need to be handled differently.

Please note the detailed description in the specific manuals.

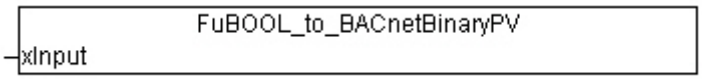
Conversions

BACnetBinaryPV

BACnetBinaryPV_to_BOOL

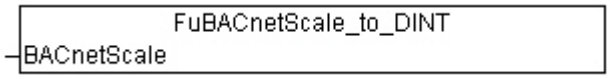
WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuBACnetBinaryPV_to_BOOL		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
BACnetBinaryPV	BACnetBinaryPV		
Return value:	**Data type:**	**Comment:**	
FuBACnetBinaryPV_to_BOOL	BOOL		
Graphical illustration:			
			
Function description:			
The function converts the BACnetBinaryPV data type into the BOOL data type:			

FuBOOL_to_BACnetBinaryPV

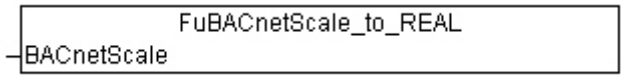
WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuBOOL_to_BACnetBinaryPV		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
xInput	BOOL		
Return value:	**Data type:**	**Comment:**	
FuBOOL_to_BACnetBinaryPV	BACnetBinaryPV		
Graphical illustration:			
			
Function description:			
The function converts the BOOL data type into the BACnetBinaryPV data type.			

BACnetScale

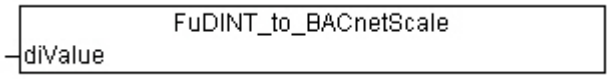
FuBACnetScale_to_DINT

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuBACnetScale_to_DINT		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
BACnetScale	BACnetScale		
Return value:	**Data type:**	**Comment:**	
FuBACnetScale_to_DINT	DINT		
Graphical illustration:			
			
Function description:			
The function converts the BACnetScale data type into the DINT data type.			

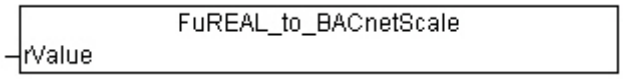
FuBACnetScale_to_REAL

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuBACnetScale_to_REAL		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
BACnetScale	BACnetScale		
Return value:	**Data type:**	**Comment:**	
FuBACnetScale_to_REAL	REAL		
Graphical illustration:			
			
Function description:			
The function converts the BACnetScale data type into the REAL data type.			

FuDINT_to_BACnetScale

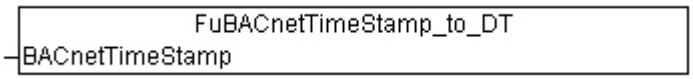
WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuDINT_to_BACnetScale		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
diValue	DINT		
Return value:	**Data type:**	**Comment:**	
FuDINT_to_BACnetScale	BACnetScale		
Graphical illustration:			
			
Function description:			
The function converts the DINT data type into the BACnetScale data type.			

FuREAL_to_BACnetScale

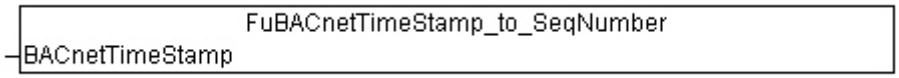
WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuREAL_to_BACnetScale		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
rValue	REAL		
Return value:	**Data type:**	**Comment:**	
FuREAL_to_BACnetScale	BACnetScale		
Graphical illustration:			
			
Function description:			
The function converts the REAL data type into the BACnetScale data type.			

BACnetTimeStamp

FuBACnetTimeStamp_to_DT

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuBACnetTimeStamp_to_DT		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
BACnetTimeStamp	BACnetTimeStamp		
Return value:	**Data type:**	**Comment:**	
FuBACnetTimeStamp_to_DT	DT		
Graphical illustration:			
			
Function description:			
The function converts the BACnetTimeStamp data type into the DT data type.			

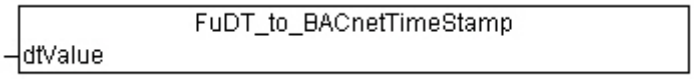
FuBACnetTimeStamp_to_SeqNumber

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuBACnetTimeStamp_to_SeqNumber		
Type:	Function ☒	Function block ☐	Program ☐
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
BACnetTimeStamp	BACnetTimeStamp		
Return value:	**Data type:**	**Comment:**	
FuBACnetTimeStamp_to_SeqNumber	WORD		
Graphical illustration:			
			
Function description:			
The function converts the BACnetTimeStamp data type into the WORD data type.			

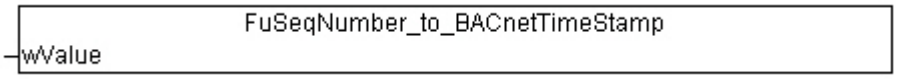
FuBACnetTimeStamp_to_TOD

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuBACnetTimeStamp_to_TOD		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
BACnetTimeStamp	BACnetTimeStamp		
Return value:	**Data type:**	**Comment:**	
FuBACnetTimeStamp_to_TOD	TOD		
Graphical illustration:			
			
Function description:			
The function converts the BACnetTimeStamp data type into the TOD data type.			

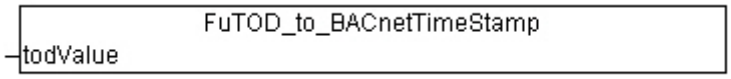
FuDT_to_BACnetTimeStamp

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuDT_to_BACnetTimeStamp		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
dtValue	DT		
Return value:	**Data type:**	**Comment:**	
FuDT_to_BACnetTimeStamp	BACnetTimeStamp		
Graphical illustration:			
			
Function description:			
The function converts the DT data type into the BACnetTimeStamp data type.			

FuSeqNumber_to_BACnetTimeStamp

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuSeqNumber_to_BACnetTimeStamp		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
wValue	WORD		
Return value:	**Data type:**	**Comment:**	
FuSeqNumber_to_BACnetTimeStamp	BACnetTimeStamp		
Graphical illustration:			
			
Function description:			
The function converts the WORD data type into the BACnetTimeStamp data type.			

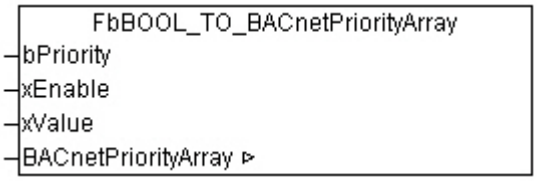
FuTOD_to_BACnetTimeStamp

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FuTOD_to_BACnetTimeStamp		
Type:	Function [X]	Function block [ ]	Program [ ]
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
todValue	TOD		
Return value:	**Data type:**	**Comment:**	
FuTOD_to_BACnetTimeStamp	BACnetTimeStamp		
Graphical illustration:			
			
Function description:			
The function converts the TOD data type into the BACnetTimeStamp data type.			

BACnetPriorityArray

FbBOOL_TO_BACnetPriorityArray

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FbBOOL_TO_BACnetPriorityArray		
Type:	Function ☐	Function block ☒	Program ☐
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
bPriority	BYTE	Priority Value range: 1-16 Default setting = 16	
xEnable	BOOL	Activation of priority specification	
xValue	BOOL	Value specification	
Input/output parameter:	**Data type:**	**Comment:**	
BACnetPriorityArray	BACnetPriorityArray	Priority settings for the BACnet property of BACnetPriorityArray	
Graphical illustration:			

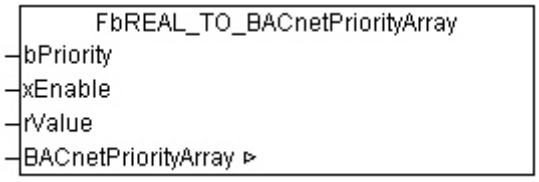


Function description:

The function block is used to write in a prioritized manner to the "Priority_Array" property of a BACnet object. In this way, it is possible to impact the same "Present_Value" property from both the BACnet network and the IEC application. The priority specifies which party is to receive permission to write to the "Present_Value" property. The ***"bPriority"*** input is used to determine the write priority of the IEC application. A value of 1 denotes highest priority, and a value of 16 denotes lowest priority.
The ***"xValue"*** value is only written in the *"BACnetPriorityArray"* variable when the ***"xEnable"*** input is activated. If this input is not activated, the "NULL" value is written in the array element (specified via *"bPriority"*) of the *"BACnetPriorityArray"* variables. The "NULL" value can be used to reset write access with a specific priority.
The ***"BACnetPriorityArray"*** input should be connected with the "Priority_Array" property of a BACnet object (e.g., BACNET_BINARY_VALUE).

FbREAL_TO_BACnetPriorityArray

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FbREAL_TO_BACnetPriorityArray		
Type:	Function ☐	Function block ☒	Program ☐
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
bPriority	BYTE	Priority Value range: 1-16 Default setting = 16	
xEnable	BOOL	Activation of priority specification	
rValue	REAL	Value specification	
Input/output parameter:	**Data type:**	**Comment:**	
BACnetPriorityArray	BACnetPriorityArray	Priority settings for the BACnet property of BACnetPriorityArray	
Graphical illustration:			

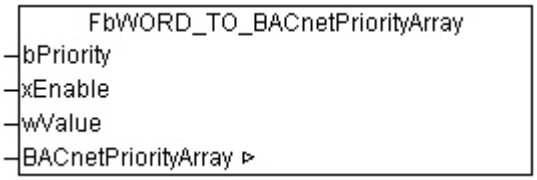


Function description:

The function block is used to write in a prioritized manner to the "Priority_Array" property of a BACnet object. In this way, it is possible to impact the same "Present_Value" property from both the BACnet network and the IEC application. The priority specifies which party is to receive permission to write to the "Present_Value" property. The ***"bPriority"*** input is used to determine the write priority of the IEC application. A value of 1 denotes highest priority, and a value of 16 denotes lowest priority.
The ***"rValue"*** value is only written in the *"BACnetPriorityArray"* variable when the ***"xEnable"*** input is activated. If this input is not activated, the "NULL" value is written in the array element (specified via *"bPriority"*) of the *"BACnetPriorityArray"* variables. The "NULL" value can be used to reset write access with a specific priority.
The ***"BACnetPriorityArray"*** input should be connected with the "Priority_Array" property of a BACnet object (e.g., BACNET_ANALOG_VALUE).

FbWORD_TO_BACnetPriorityArray

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	FbWORD_TO_BACnetPriorityArray		
Type:	Function ☐	Function block ☒	Program ☐
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Input parameter:	**Data type:**	**Comment:**	
bPriority	BYTE	Priority Value range: 1-16 Default setting = 16	
xEnable	BOOL	Activation of priority specification	
wValue	WORD	Value specification	
Input/output parameter:	**Data type:**	**Comment:**	
BACnetPriorityArray	BACnetPriorityArray	Priority settings for the BACnet property of BACnetPriorityArray	
Graphical illustration:			



Function description:

The function block is used to write in a prioritized manner to the "Priority_Array" property of a BACnet object. In this way, it is possible to impact the same "Present_Value" property from both the BACnet network and the IEC application. The priority specifies which party is to receive permission to write to the "Present_Value" property. The ***"bPriority"*** input is used to determine the write priority of the IEC application. A value of 1 denotes highest priority, and a value of 16 denotes lowest priority.
The ***"wValue"*** value is only written in the *"BACnetPriorityArray"* variable when the ***"xEnable"*** input is activated. If this input is not activated, the "NULL" value is written in the array element (specified via *"bPriority"*) of the *"BACnetPriorityArray"* variables. The "NULL" value can be used to reset write access with a specific priority.
The ***"BACnetPriorityArray"*** input should be connected with the "Priority_Array" property of a BACnet object (e.g., BACNET_MULTISTATE_VALUE).

BACnet Objects

General

The library contains the structure of several BACnet objects in order to define non-native BACnet objects for the 750-830 controller via the IEC application. These objects can be exported to the WAGO BACnet configurator using the SYM_XML file.

BACNET_ANALOG_VALUE

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACNET_ANALOG_VALUE	
Type:	Data type [X]	Enumeration [ ]
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		

```
TYPE BACNET_ANALOG_VALUE :
STRUCT
        Object_Name             :STRING(48);
        Present_Value           :REAL;
        Status_Flags            :BACnetStatusFlags;
        Out_Of_Service          :BOOL;
        Priority_Array          :BACnetPriorityArray;
END_STRUCT
END_TYPE
```

BACNET_BINARY_VALUE

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACNET_BINARY_VALUE	
Type:	Data type ☒	Enumeration ☐
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		

```
TYPE BACNET_BINARY_VALUE :
STRUCT
        Object_Name             :STRING(48);
        Present_Value           :BACnetBinaryPV;
        Status_Flags            :BACnetStatusFlags;
        Out_Of_Service          :BOOL;
        Priority_Array          :BACnetPriorityArray;
END_STRUCT
END_TYPE
```

BACNET_MULTISTATE_VALUE

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACNET_MULTISTATE_VALUE	
Type:	Data type ☒	Enumeration ☐
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		

```
TYPE BACNET_MULTISTATE_VALUE :
STRUCT
        Object_Name             :STRING(48);
        Present_Value           :DWORD;
        Status_Flags            :BACnetStatusFlags;
        Out_Of_Service          :BOOL;
        Number_Of_States        :DWORD;
        Priority_Array          :BACnetPriorityArray;
END_STRUCT
END_TYPE
```

Object Data Types

BACnetPriorityArray

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACnetPriorityArray	
Type:	Data type ☒	Enumeration ☐
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		

```
TYPE BACnetPriorityArray :

STRUCT
        PriorityArray     :ARRAY[1..16] OF BACnetPriorityValue;
END_STRUCT
END_TYPE
```

BACnetPriorityValue

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACnetPriorityValue	
Type:	Data type ☒	Enumeration ☐
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		

```
TYPE BACnetPriorityValue :
STRUCT
        CHOICE          :BYTE;
        VALUE           :DWORD;
END_STRUCT
END_TYPE
```

BACnetScale

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACnetScale	
Type:	Data type [X]	Enumeration [ ]
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		

```
TYPE BACnetScale :
STRUCT
        CHOICE          : BYTE;
        VALUE           : ARRAY [0..3] OF BYTE;
END_STRUCT
END_TYPE
```

BACnetStatusFlags

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACnetStatusFlags	
Type:	Data type [X]	Enumeration [ ]
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		

```
TYPE BACnetStatusFlags :
STRUCT
        in_alarm                :BOOL;
        fault                   :BOOL;
        overridden_StatusFlage  :BOOL;
        out_of_service          :BOOL;
END_STRUCT
END_TYPE
```

BACnetTimeStamp

WAGO-I/O-*PRO* CAA Library Elements			
Category:	Building Automation		
Name:	BACnetTimeStamp		
Type:	Data type	X	Enumeration ☐
Name of library:	BACnet_01_easy.lib		
Applicable to:	750-830		
Declaration:			

```
TYPE BACnetTimeStamp :
STRUCT
        CHOICE      :DWORD;
        VALUE       :ARRAY [0..7] OF BYTE;
END_STRUCT
END_TYPE
```

Enumerations

BACnetBinaryPV

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACnetBinaryPV	
Type:	Data type ☐	Enumeration ☒
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		
TYPE BACnetBinaryPV :(inactive :=0, active :=1); END_TYPE		

BACnetMaintenance

WAGO-I/O-*PRO* CAA Library Elements		
Category:	Building Automation	
Name:	BACnetMaintenance	
Type:	Data type ☐	Enumeration ☒
Name of library:	BACnet_01_easy.lib	
Applicable to:	750-830	
Declaration:		
TYPE BACnetMaintenance :(none_Maintenance :=0, periodic_test :=1, need_service_operational :=2, need_service_inoperative :=3); END_TYPE		

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