

WAGO I/O SYSTEM 750

**Library for
Building Automation**

Module Descriptions for KNX/EIB

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Every conceivable measure has been taken to ensure the correctness and completeness of this documentation. However, as errors can never be fully excluded, we would appreciate any information or ideas at any time.

We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally protected by trademark or patent.

WAGO-I/O-PRO CAA Library for KNX Communication

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Important Notes

To ensure fast 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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Intended Use

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 the manuals. All other changes to the hardware and/or software and the non-conforming use of the components entail the exclusion of liability on the part of WAGO Kontakttechnik GmbH & Co. KG.

Please direct any requirements pertaining to a modified and/or new hardware or software configuration directly to WAGO Kontakttechnik GmbH & Co. KG.

Scope of Validity

This application note is based on the stated hardware and software of the specific manufacturer as well as the correspondent 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.

List of Supported Data Point Types (DPTs)

DPT 1-Bit (Boolean) / EIS 1		
ID:	Name:	Described on page:
1001	DPT_Switch	15
1002	DPT_Bool	15
1003	DPT_Enable	15
1004	DPT_Ramp	15
1005	DPT_Alarm	15
1006	DPT_BinaryValue	15
1007	DPT_Step	15
1008	DPT_UpDown	15
1009	DPT_OpenClose	15
1010	DPT_Start	15
1011	DPT_State	15
1012	DPT_Invert	15
1013	DPT_DimSendStyle	15
1014	DPT_InputSource	15

DPT 1-Bit (Controlled) / EIS 8		
ID:	Name:	Described on page:
2001	DPT_Switch_Control	17
2002	DPT_Bool_Control	17
2003	DPT_Enable_Control	17
2004	DPT_Ramp_Control	17
2005	DPT_Alarm_Control	17
2006	DPT_BinaryValue_Control	17
2007	DPT_Step_Control	17
2008	DPT_Direction1_Control	17
2009	DPT_Direction2_Control	17
2010	DPT_Start_Control	17
2011	DPT_State_Control	17
2012	DPT_Invert_Control	17

DPT 3-Bit (Controlled) / EIS 2		
ID:	Name:	Described on page:
3007	DPT_Control_Dimming	19
3008	DPT_Control_Blinds	19
3009	DPT_Mode_Boiler	19

DPT 1-Byte (Character Set) / EIS 13		
ID:	Name:	Described on page:
4001	DPT_Char_ASCII	22
4002	DPT_Char_8859_1	22

DPT 1-Byte Unsigned / EIS 6/14		
ID:	Name:	Described on page:
5001	DPT_Scaling	24
5003	DPT_Angle	24
5004	DPT_Percent_U8	24
5010	DPT_Value_1_Ucount	24

DPT 1-Byte Signed / EIS 14		
ID:	Name:	Described on page:
6010	DPT_Value_1_Count	26
6020	DPT_Status_Mode3	26

DPT 2-Byte Unsigned / EIS 10		
ID:	Name:	Described on page:
7001	DPT_Value_2_Ucount	28
7002	DPT_TimePeriodMsec	28
7003	DPT_TimePeriod10Msec	28
7004	DPT_TimePeriod100Msec	28
7005	DPT_TimePeriodSec	28
7006	DPT_TimePeriodMin	28
7007	DPT_TimePeriodHrs	28
7010	DPT_PropDataType	28

DPT 2-Byte Signed / EIS 10		
ID:	Name:	Described on page:
8001	DPT_Value_2_Count	30

DPT 2-ByteFloat / EIS 5		
ID:	Name:	Described on page:
9001	DPT_Value_Temp	32
9002	DPT_Value_Tempd	32
9003	DPT_Value_Tempa	32
9004	DPT_Value_Lux	32
9005	DPT_Value_Wsp	32
9006	DPT_Value_Pres	32
9010	DPT_Value_Time1	32
9011	DPT_Value_Time2	32
9020	DPT_Value_Volt	32
9021	DPT_Value_Curr	32
9001	DPT_Value_Temp	32

DPT 3-Byte Time / EIS 3		
ID:	Name:	Described on page:
10001	DPT_TimeOfDay	34

List of Supported Data Point Types (DPTs)

DPT 3-Byte Date / EIS 4		
ID:	Name:	Described on page:
11001	DPT_Date	36

DPT 4-Byte Unsigned / EIS 11		
ID:	Name:	Described on page:
12001	DPT_Value_4_Ucount	38

DPT 4-Byte Signed / EIS 11		
ID:	Name:	Described on page:
13001	DPT_Value_4_Count	40

DPT 4-Byte Float / EIS 9		
ID:	Name:	Described on page:
14000	DPT_Value_Acceleration	42
14001	DPT_Value_Acceleration_Angular	42
14002	DPT_Value_Activation_Energy	42
14003	DPT_Value_Activity	42
14004	DPT_Value_Mol	42
14005	DPT_Value_Amplitude	42
14006	DPT_Value_AngleRad	42
14007	DPT_Value_AngleDeg	42
14008	DPT_Value_Angular_Momentum	42
14009	DPT_Value_Angular_Velocity	42
14010	DPT_Value_Area	42
14011	DPT_Value_Capacitance	42
14012	DPT_Value_Charge_DensitySurfac	42
14013	DPT_Value_Charge_DensityVolum	42
14014	DPT_Value_Compressibility	42
14015	DPT_Value_Conductance	42
14016	DPT_Value_Electrical_Conductivity	42
14017	DPT_Value_Density	42
14018	DPT_Value_Electric_Charge	42
14019	DPT_Value_Electric_Current	42
14020	DPT_Value_Electric_CurrentDensit	42
14021	DPT_Value_Electric_DipoleMoment	42
14022	DPT_Value_Electric_Displacement	42
14023	DPT_Value_Electric_FieldStrength	42
14024	DPT_Value_Electric_Flux	42
14025	DPT_Value_Electric_FluxDensity	42
14026	DPT_Value_Electric_Polarization	42
14027	DPT_Value_Electric_Potential	42
14028	DPT_Value_Electric_PotentialDiffer	42
14029	DPT_Value_ElectromagneticMMom	42
14030	DPT_Value_Electromotive_Force	42
14031	DPT_Value_Energy	42
14032	DPT_Value_Force	42

List of Supported Data Point Types (DPTs)



14033	DPT_Value_Frequency	42
14034	DPT_Value_Angular_Frequency	42
14035	DPT_Value_Heat_Capacity	42
14036	DPT_Value_Heat_FlowRate	42
14037	DPT_Value_Heat_Quantity	42
14038	DPT_Value_Impedance	42
14039	DPT_Value_Length	42
14040	DPT_Value_Light_Quantity	42
14041	DPT_Value_Luminance	42
14042	DPT_Value_Luminous_Flux	42
14043	DPT_Value_Luminous_Intensity	42
14044	DPT_Value_Magnetic_FieldStrengt	42
14045	DPT_Value_Magnetic_Flux	42
14046	DPT_Value_Magnetic_FluxDensity	42
14047	DPT_Value_Magnetic_Moment	42
14048	DPT_Value_Magnetic_Polarization	42
14049	DPT_Value_Magnetization	42
14050	DPT_Value_MagnetomotiveForce	42
14051	DPT_Value_Mass	42
14052	DPT_Value_MassFlux	42
14053	DPT_Value_Momentum	42
14054	DPT_Value_Phase_AngleRad	42
14055	DPT_Value_Phase_AngleDeg	42
14056	DPT_Value_Power	42
14057	DPT_Value_Power_Factor	42
14058	DPT_Value_Pressure	42
14059	DPT_Value_Reactance	42
14060	DPT_Value_Resistance	42
14061	DPT_Value_Resistivity	42
14062	DPT_Value_SelfInductance	42
14063	DPT_Value_SolidAngle	42
14064	DPT_Value_Sound_Intensity	42
14065	DPT_Value_Speed	42
14066	DPT_Value_Stress	42
14067	DPT_Value_Surface_Tension	42
14068	DPT_Value_Common_Temperature	42
14069	DPT_Value_Absolute_Temperature	42
14070	DPT_Value_TemperatureDifference	42
14071	DPT_Value_Thermal_Capacity	42
14072	DPT_Value_Thermal_Conductivity	42
14073	DPT_Value_ThermoelectricPower	42
14074	DPT_Value_Time	42
14075	DPT_Value_Torque	42
14076	DPT_Value_Volume	42
14077	DPT_Value_Volume_Flux	42
14078	DPT_Value_Weight	42
14079	DPT_Value_Work	42

List of Supported Data Point Types (DPTs)

DPT 4-Byte Access / EIS 12		
ID:	Name:	Described on page:
15000	DPT_Access_Data	46

DPT 14-Byte (String) / EIS15		
ID:	Name:	Described on page:
16000	DPT_String_ASCII	
16001	DPT_String_8859_1	49

Modules

KNX Master Module 753-646

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbKNX_Master_646	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Libraries used:	SysLibGetAddress.lib mod_com.lib	
Input parameters:	Data type:	Description:
bModule_753_646	BYTE	Index for KNX module 753-646 Default = 1
Input / output parameters	Data type:	Description:
typKNX	typKNX	KNX transmit and receive data (internal)
dwCRC	DWORD	Checksum via addresses
bHW_type	BYTE	Display of modules/controller master
bError	BYTE	Error byte
typModule_646	typModule_646	Data table for communication with other KNX function blocks
.bNumber	BYTE	Number of linked slave modules
.bCurrent_Pos	BYTE	Number of slave currently being queried
.dwSendAddr	DWORD	Reference address for variable to be sent
.dwReceAddr	DWORD	Address of DPT variables being received
.xBusy	BOOL	Master is busy
.xNewData	BOOL	Flag of new data from module
.xTimeOut	BOOL	KNX object TimeOut
.xSendOnReset	BOOL	Initiate SendOnReset
.xSyncReady	BOOL	Synchronization completed
.bBytesToSend	BYTE	Number of bytes to be sent
.arDATA_OUT	ARRAY	Data array for output user data
.arDATA_IN	ARRAY	Data array for input user data

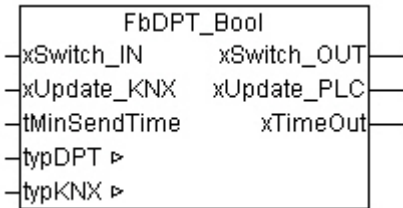
Output parameters:	Data type:	Description:
enumStatusKNX	enumStatusKNX	Output of status information KNX_NOT_INIT KNX_OK KNX_TX_CHECKSUM KNX_NO_DEVICE_MODUS KNX_TimeOutSend KNX_TimeOutReceive KNX_TimeOutSYNC KNX_COM_ERROR KNX_POWER_FAILURE KNX_ERROR_MODULE KNX_SYNC
xProg_Mode	BOOL	Module in programming mode
Graphical illustration:		
Function description:		
<p>The "<i>FbKNX_Master_646</i>" function block is used for communication with the KNX module 753-646 on fieldbus controllers 750-8xx.</p> <p>This function block detects all queued commands of the other KNX function blocks in the program and initiates their execution. The commands are made available in the form of a data table via the variable "<i>typKNX</i>". The input/output variable "<i>typKNX</i>" contains all relevant call parameters and data for the sent / received KNX telegrams.</p> <p>The controller recognizes the plugged KNX modules on its own and counts them one after the other, starting from the left. To address the function block to the proper KNX module, the corresponding module index must be entered as a constant at the input "<i>bModule_753_646</i>".</p> <p>This function block may be used only once per installed KNX module. All other KNX function blocks must be linked with this function block via the input variable "<i>typKNX</i>".</p> <p>The "<i>enumStatusKNX</i>" output variable provides status information about module communication. The output "<i>xProg_Mode</i>" indicates whether the KNX module is in the programming mode.</p>		
Important:		
<p>All KNX function blocks that are linked by the variable "<i>typKNX</i>" must be called up in cycles within the same program task.</p>		

KNX Master Module 753-646 at IPC 758-8xx

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbKNX_Master_646_IPC	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	WAGO-I/O-IPC 758-87x	
Libraries used:	SysLibGetAddress.lib	
Input parameters:	Data type:	Description:
arInData	ARRAY [0..23] OF BYTE	Input array for KNX module 753-646
Input / output parameters	Data type:	Description:
arOutData	ARRAY [0..23] OF BYTE	Output array for KNX module 753-646
typKNX	typKNX	KNX transmit and receive data (internal)
.dwCRC	DWORD	Checksum via addresses
.bHW_type	BYTE	Display of modules/controller master
.bError	BYTE	Error byte
.typModule_646	typModule_646	Data table for communication with other KNX function blocks
.bNumber	BYTE	Number of linked slave modules
.bCurrent_Pos	BYTE	Number of slave currently being queried
.dwSendAddr	DWORD	Reference address for variable to be sent
.dwReceAddr	DWORD	Address of DPT variables being received
.xBusy	BOOL	Master is busy
.xNewData	BOOL	Flag of new data from module
.xTimeOut	BOOL	KNX object TimeOut
.xSendOnReset	BOOL	Initiate SendOnReset
.xSyncReady	BOOL	Synchronization completed
.bBytesToSend	BYTE	Number of bytes to be sent
.arDATA_OUT	ARRAY	Data array for output user data
.arDATA_IN	ARRAY	Data array for input user data

Output parameters:	Data type:	Description:
enumStatusKNX	enumStatusKNX	Output of status information KNX_NOT_INIT KNX_OK KNX_TX_CHECKSUM KNX_NO_DEVICE_MODUS KNX_TimeOutSend KNX_TimeOutReceive KNX_TimeOutSYNC KNX_COM_ERROR KNX_POWER_FAILURE KNX_ERROR_MODULE KNX_SYNC
xProg_Mode	BOOL	Module in programming mode
Graphical illustration:		
Function description:		
<p>The "<i>FbKNX_Master_646_IPC</i>" function block is used for communication with the KNX module 753-646 on WAGO-I/O-IPC 758-87x controllers.</p> <p>This function block detects all queued commands of the other KNX function blocks in the program and initiates their execution. The commands are made available in the form of a data table via the variable "<i>typKNX</i>". The input/output variable "<i>typKNX</i>" contains all relevant call parameters and data for the sent / received KNX telegrams.</p> <p>The "<i>arInData</i>" and "<i>arOutData</i>" inputs contain the input and output array for the KNX module data. The variables at these inputs must be linked to the corresponding hardware address. The address depends on the installation position of the module.</p> <p>Example:</p> <p><i>arInData</i> = Input AT %IB0 : ARRAY [0..23] OF BYTE; <i>arOutData</i> = Output AT %QB0 : ARRAY [0..23] OF BYTE;</p> <p>This function block may be used only once per installed KNX module. All other KNX function blocks must be linked with this function block via the input variable "<i>typKNX</i>".</p> <p>The "<i>enumStatusKNX</i>" output variable provides status information about module communication. The output "<i>xProg_Mode</i>" indicates whether the KNX module is in the programming mode.</p> <p>Important:</p> <p>All KNX function blocks that are linked by the variable "<i>typKNX</i>" must be called up in cycles within the same program task.</p>		

DPT 1-Bit (Boolean) / EIS 1

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
xSwitch_IN	BOOL	Input switching signal
xUpdate_KNX	BOOL	Initiate telegram update
tMinSendTime	TIME	Parameter value for MinSendTime
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
xSwitch_OUT	BOOL	Output switching signal
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT Bool:		
		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**xSwitch_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**xSwitch_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output value "**xSwitch_OUT**" to be retained after a controller reset.

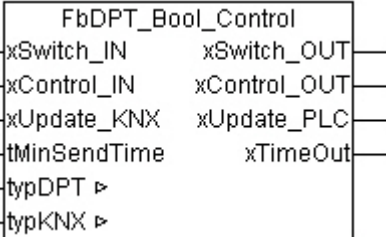
A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID:	Name:	[min ... max]	Unit:
1001	DPT_Switch		
1.002	DPT_Bool		
1.003	DPT_Enable		
1.004	DPT_Ramp		
1.005	DPT_Alarm		
1.006	DPT_BinaryValue		
1.007	DPT_Step		
1.008	DPT_UpDown		
1.009	DPT_OpenClose		
1.010	DPT_Start		
1.011	DPT_State		
1.012	DPT_Invert		
1.013	DPT_DimDendStyle		
1.014	DPT_InputSource		

DPT 1-Bit (Controlled) / EIS 8

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
xSwitch_IN	BOOL	Input switching signal
xControl_IN	BOOL	Input signal override
xUpdate_KNX	BOOL	Initiate telegram update
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
xSwitch_OUT	BOOL	Output switching signal
xControl_OUT	BOOL	Output signal override
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT_Bool_Control:		
		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx). The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another. The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**xSwitch_IN**" causes a telegram to be transmitted to the KNX module/controller. If the input signal "**xControl_IN**" is also set, the output telegram is sent by prompting. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**xSwitch_OUT**" output. Prompting is active when the "**xControl_OUT**" output is set. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values "**xSwitch_OUT**" to be retained after a controller reset.

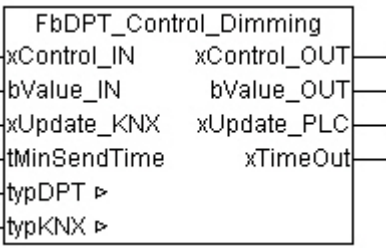
A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID:	Name:	[min ... max]	Unit:
2.001	DPT_Switch_Control		
2.002	DPT_Bool_Control		
2.003	DPT_Enable_Control		
2.004	DPT_Ramp_Control		
2.005	DPT_Alarm_Control		
2.006	DPT_BinaryValue_Control		
2.007	DPT_Step_Control		
2.008	DPT_Direction1_Control		
2.009	DPT_Direction2_Control		
2.010	DPT_Start_Control		
2.011	DPT_State_Control		
2.012	DPT_Invert_Control		

DPT 3-Bit (Controlled) / EIS 2

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
xControl_IN	BOOL	Dimming direction
bValue_IN	BYTE	Dimming increment Value range: 0 - 7
xUpdate_KNX	BOOL	Initiate telegram update
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
xControl_OUT	BOOL	Dimming direction
bValue_OUT	BYTE	Dimming increment Value range: 0 - 7
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT_Control_Dimming:		
		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at inputs "**xControl_IN**" or "**bValue_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**xControl_OUT**" or "**bValue_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID:	Name:	[min ... max]	Unit:
3.007	DPT_Control_Dimming		
3.008	DPT_Control_Blinds		
3.009	DPT_Mode_Boiler		

Scaling for DPT_Control_Dimming and DPT_Control_Blinds:

bValue	Increment
0	Stop
1	100 %
2	50 %
3	25 %
4	12 %
5	6 %
6	3 %
7	1 %

xControl	Dimming direction
TRUE	upward
FALSE	downward

Scaling for DPT_Mode_Boiler:

bValue	Mode
1	Mode 0
2	Mode 1
4	Mode 2

xControl	Status
TRUE	calculated
FALSE	fixed

DPT 1-Byte (Character Set) / EIS 13

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
stChar_IN	STRING (1)	Input character
xUpdate_KNX	BOOL	Initiate telegram update
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
stChar_OUT	STRING (1)	Output character
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT_Char_ASCII:		
<pre> graph TD subgraph FbDPT_Char_ASCII stChar_IN --> block stChar_OUT --> block xUpdate_KNX --> block xUpdate_PLC --> block tMinSendTime --> block xTimeOut --> block typDPT --> block typKNX --> block end </pre>		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**stChar_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

the function block is used for receiving data (output), the data received from the module/controller is signaled at the "stChar_OUT" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ÎD :	Name:	[min ... max]	Unit:
4.001	DPT_Char_ASCII	[0..127]	
4.002	DPT_Char_8859_1	[0..255]	

Scaling for DPT_Char_ASCII and DPT_Char_8859_1:

MSN	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LSN																
0	NUL	DLE		0	@	P	`	p				°	À	Ð	à	ð
1	SOH	DC1	!	1	A	Q	a	q			¡	±	Á	Ñ	á	ñ
2	STX	DC2	"	2	B	R	b	r			¢	²	Â	Ó	â	ò
3	ETX	DC3	#	3	C	S	c	s			£	³	Ã	Ô	ã	ó
4	EOT	DC4	\$	4	D	T	d	t			¤	´	Ä	Õ	ä	ô
5	ENQ	NAK	%	5	E	U	e	u			¥	µ	Å	Ö	å	ö
6	ACK	SYN	&	6	F	V	f	v			¦	¶	Æ	Ø	æ	ø
7	BEL	ETB	'	7	G	W	g	w			§	·	Ç	×	ç	÷
8	BS	CAN	(	8	H	X	h	x			¨	¸	È	Ù	è	ù
9	HT	EM	)	9	I	Y	i	y			©	¹	É	Ú	é	ú
A	LF	SUB	*	:	J	Z	j	z			ª	º	Ê	Û	ê	û
B	VT	ESC	+	;	K	[	k	{			«	»	Ë	Ü	ë	ü
C	FF	FS	,	<	L	\	l	|			¬	¼	Ì	Ý	ì	ý
D	CR	GS	-	=	M	]	m	}			-	½	Í	Þ	í	þ
E	SO	RS	.	>	N	^	n	~			®	¾	Î	ß	î	ÿ
F	SI	US	/	?	O	_	o				¯	¿	Ï	ß	ï	ÿ

LSN = Least Significant Nibble

MSN = Most Significant Nibble

DPT 1-Byte Unsigned / EIS 6/14

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
rValue_IN bValue_IN	REAL / BYTE	Input value
xUpdate_KNX	BOOL	Initiate telegram update
rSendOnDelta bSendOnDelta	REAL / BYTE	Hysteresis for sending conditions Default setting = 0
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
rValue_OUT / bValue_OUT	REAL / BYTE	Output value
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT_Scaling:		
<pre> graph LR subgraph FbDPT_Scaling rValue_IN --> rValue_OUT xUpdate_KNX --> xUpdate_PLC rSendOnDelta --> xTimeOut tMinSendTime typDPT typKNX end </pre>		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "*rValue_IN*" or "*bValue_IN*" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "*xUpdate_KNX*" input.

The parameter "*rSendOnDelta*" or "*bSendOnDelta*" indicates the amount by which the input value "*rValue_IN*" must change before an update is initiated within the network. The sending frequency can be limited in this manner.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "*tMinSendTime*", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "*rValue_OUT*" or "*bValue_OUT*" output. The non-scaled values for the received data are provided as a "*typDPT*" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "*xUpdate_PLC*". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "*xTimeOut*".

The above description applies to the following DPTs:

ID :	Name:	[min ...max]	Unit:
5.001	DPT_Scaling	[0..100]	%
5.003	DPT_Angle	[0..360]	°
5.004	DPT_Percent_U8	[0..255]	%
5.010	DPT_Value_1_Ucount	[0..255]	

DPT 1-Byte Signed / EIS 14

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_Value_1_Count	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
siValue_IN	SINT	Input value
xUpdate_KNX	BOOL	Initiate telegram update
bSendOnDelta	BYTE	Hysteresis for sending conditions Default setting = 0
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
siValue_OUT	SINT	Output value
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration:		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**siValue_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The parameter "**bSendOnDelta**" indicates the amount by which the input value "**siValue_IN**" must change before an update is initiated within the network. The sending frequency can be limited in this manner.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**siValue_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID :	Name:	[min ...max]	Unit:
6.010	DPT_Value_1_Count	[-128 .. 127]	
6.020	DPT_Status_Mode3	xA = 0/1 xB = 0/1 xC = 0/1 xD = 0/1 xE = 0/1 bMode : 1 = Mode_0 2 = Mode_1 4 = Mode_2	

DPT 2-Byte Unsigned / EIS 10

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
wValue_IN	WORD	Input value
xUpdate_KNX	BOOL	Initiate telegram update
bSendOnDelta	BYTE	Hysteresis for sending conditions Default setting = 0
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
wValue_OUT	WORD	Output value
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT_Value_2_Ucount:		
<pre> graph LR subgraph FbDPT_Value_2_Ucount direction TB wValue_IN --- wValue_OUT xUpdate_KNX --- xUpdate_PLC bSendOnDelta --- xTimeOut tMinSendTime typDPT typKNX end </pre>		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**wValue_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The parameter "**bSendOnDelta**" indicates the amount by which the input value "**wValue_IN**" must change before an update is initiated within the network. The sending frequency can be limited in this manner.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**wValue_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID :	Name:	[min ...max]	Unit:
7.001	DPT_Value_2_Ucount	[0 ... 65535]	pulses
7.002	DPT_TimePeriodMsec	[0 ... 65535]	ms
7.003	DPT_TimePeriod10Msec	[0 ... 65535]	0.1 ms (0... 6553.5 s)
7.004	DPT_TimePeriod100Msec	[0 ... 65535]	0.01 ms (0... 655.35 s)
7.005	DPT_TimePeriodSec	[0 ... 65535]	s (0... 65 535 s)
7.006	DPT_TimePeriodMin	[0 ... 65535]	min
7.007	DPT_TimePeriodHrs	[0 ... 65535]	h
7.010	DPT_PropDataType	[0 ... 65535]	

DPT 2-Byte Signed / EIS 10

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_Value_2_Count	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
iValue_IN	INT	Input value
xUpdate_KNX	BOOL	Initiate telegram update
bSendOnDelta	BYTE	Hysteresis for sending conditions Default setting = 0
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
iValue_OUT	INT	Output value
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration:		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**iValue_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The parameter "**bSendOnDelta**" indicates the amount by which the input value "**iValue_IN**" must change before an update is initiated within the network. The sending frequency can be limited in this manner.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**iValue_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID :	Name :	[min ...max]	Unit:
8.010	DPT_Value_2_Count	[-32768 .. 32767]	

DPT 2-Byte Float / EIS 5

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
rValue_IN	REAL	Input value
xUpdate_KNX	BOOL	Initiate telegram update
rSendOnDelta	REAL	Hysteresis for sending conditions Voreinstellung = 0.5
tMinSendTime	TIME	Parameter value for MinSendTime Default setting = t#1s
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
rValue_OUT	REAL	Output value
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT_Value_Temp:		
<pre> graph LR subgraph FbDPT_Value_Temp rValue_IN --> Block xUpdate_KNX --> Block rSendOnDelta --> Block tMinSendTime --> Block typDPT --> Block typKNX --> Block Block --> rValue_OUT Block --> xUpdate_PLC Block --> xTimeOut end </pre>		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for writing or reading of object values.</p>		

Sending:

A value change at input "**rValue_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The parameter "**rSendOnDelta**" indicates the amount by which the input value "**rValue_IN**" must change before an update is initiated within the network. The sending frequency can be limited in this manner.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**rValue_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID :	Name :	[min ...max]	Unit:
9.001	DPT_Value_Temp	[-273 ... 670760]	°C
9.002	DPT_Value_Tempd	[-670760 ... 670760]	K
9.003	DPT_Value_Tempa	[-670760 ... 670760]	K/h
9.004	DPT_Value_lux	[0 ... 670760]	Lux
9.005	DPT_Value_Wsp	[0 ... 670760]	m/s
9.006	DPT_Value_Pres	[0 ... 670760]	Pa
9.010	DPT_Value_Time1	[-670760 ... 670760]	s
9.011	DPT_Value_Time2	[-670760 ... 670760]	ms
9.020	DPT_Value_Volt	[-670760 ... 670760]	mV
9.021	DPT_Value_Curr	[-670760 ... 670760]	mA

DPT 3-Byte Time / EIS 3

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_TimeOfDay	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
bDayOfWeek_IN	BYTE	Day of week
bHour_IN	BYTE	Hours
bMinute_IN	BYTE	Minutes
bSecond_IN	BYTE	Seconds
xUpdate_KNX	BOOL	Initiate telegram update
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
bDayOfWeek_OUT	BYTE	Day of week
bHour_OUT	BYTE	Hours
bMinute_OUT	BYTE	Minutes
bSecond_OUT	BYTE	Seconds
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration:		
<pre> FbDPT_TimeOfDay -bDayOfWeek_IN bDayOfWeek_OUT --- -bHour_IN bHour_OUT --- -bMinute_IN bMinute_OUT --- -bSecond_IN bSecond_OUT --- -xUpdate_KNX xUpdate_PLC --- -tMinSendTime xTimeOut --- -typDPT > -typKNX > </pre>		

Function description:			
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>			
<u>Sending:</u>			
<p>A value change at inputs "bDayOfWeek_IN", "bHour_IN", "bMinute_IN" or "bSecond_IN" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "xUpdate_KNX" input.</p> <p>The minimum time interval for sending of telegrams can be defined for the function block using the parameter "tMinSendTime", allowing the volume of telegram traffic to be reduced with frequently changing signals.</p>			
<u>Receiving:</u>			
<p>If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "bDayOfWeek_OUT", "bHour_OUT", "bMinute_OUT" and "bSecond_OUT" outputs. The non-scaled values for the received data are provided as a "typDPT" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.</p> <p>A telegram update, initiated by a KNX group address, is signaled at output "xUpdate_PLC". The variable will then switch to TRUE for one program cycle.</p> <p>With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "xTimeOut".</p>			
The above description applies to the following DPTs:			
ID :	Name :	[min ...max]	Unit:
10.001	DPT_TimeOfDay		
	bDayOfWeek	[0...7]	1= Monday, 7=Sunday
	bHour	[0...23]	Hours
	bMinute	[0...59]	Minutes
	bSecond	[0...59]	Seconds

DPT 3-Byte Date / EIS 4

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_Date	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
bDayOfMonth_IN	BYTE	Day
bMonth_IN	BYTE	Month
bYear_IN	BYTE	Year
xUpdate_KNX	BOOL	Initiate telegram update
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
bDayOfMonth_OUT	BYTE	Day
bMonth_OUT	BYTE	Month
bYear_OUT	BYTE	Year
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration:		
<pre> FbDPT_Date -bDayOfMonth_IN bDayOfMonth_OUT -bMonth_IN bMonth_OUT -bYear_IN bYear_OUT -xUpdate_KNX xUpdate_PLC -tMinSendTime xTimeOut -typDPT ▶ -typKNX ▶ </pre>		

Function description:

This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).

The two function blocks are synchronized via the variable structure "**typKNX**" and must therefore be linked with one another.

The function block can be used either for sending or receiving object values.

Sending:

A value change at inputs "**bDayOfMonth_IN**", "**bMonth_IN**" or "**bYear_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**bDayOfMonth_OUT**", "**bMonth_OUT**" and "**bYear_OUT**" outputs. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID :	Name :	[min ...max]	Unit:
11.001	DPT_Date		
	bDayOfMonth	[1...31]	Day
	bMonth	[1...12]	Month
	bYear	[0...99]	Year

The following interpretation applies for the value "bYear":

If bYear ≥ 90 ==> 20th century

If bYear < 90 ==> 21st century

Example:

bYear = 0 ==> Year 2000

bYear = 4 ==> Year 2004

bYear = 99 ==> Year 1999

DPT 4-Byte Unsigned / EIS 11

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_Value_4_Ucount	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
dwValue_IN	DWORD	Input value
xUpdate_KNX	BOOL	Initiate telegram update
bSendOnDelta	BYTE	Hysteresis for sending conditions Default setting = 0
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
dwValue_OUT	DWORD	Output value
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration:		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**dwValue_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The parameter "**bSendOnDelta**" indicates the amount by which the input value "**dwValue_IN**" must change before an update is initiated within the network. The sending frequency can be limited in this manner.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**dwValue_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID :	Name :	[min ...max]	Unit:
12.001	DTP_Value_4_Ucount	[0...4294967295]	

DPT 4-Byte Signed / EIS 11

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_Value_4_count	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
diValue_IN	DINT	Input value
xUpdate_KNX	BOOL	Initiate telegram update
bSendOnDelta	BYTE	Hysteresis for sending conditions Default setting = 0
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
diValue_OUT	DINT	Output value
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration:		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**diValue_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The parameter "**bSendOnDelta**" indicates the amount by which the input value "**diValue_IN**" must change before an update is initiated within the network. The sending frequency can be limited in this manner.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**diValue_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID :	Name :	[min ...max]	Unit:
13.001	DTP_Value_4_Count	[-2147483648... 2147483647]	

DPT 4-Byte Float / EIS 9

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
rValue_IN	REAL	Input value
xUpdate_KNX	BOOL	Initiate telegram update
rSendOnDelta	REAL	Hysteresis for sending conditions Voreinstellung = 0.5
tMinSendTime	TIME	Parameter value for MinSendTime Default setting = t#1s
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
rValue_OUT	REAL	Output value
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT_Value_Area:		
<pre> graph TD subgraph FbDPT_Value_Area rValue_IN --> rValue_OUT xUpdate_KNX --> xUpdate_PLC rSendOnDelta --> xTimeOut tMinSendTime typDPT --> typDPT typKNX --> typKNX end </pre>		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for writing or reading of object values.</p>		

Sending:

A value change at input "**rValue_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The parameter "**rSendOnDelta**" indicates the amount by which the input value "**rValue_IN**" must change before an update is initiated within the network. The sending frequency can be limited in this manner.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**rValue_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ID :	Name :	[min... max]	Unit:
14.000	DPT_Value_Acceleration		m s-2
14.001	DPT_Value_Acceleration_Angular		rad s-2
14.002	DPT_Value_Activation_Energy		J mol-1
14.003	DPT_Value_Activity		s-1
14.004	DPT_Value_Mol		mol
14.005	DPT_Value_Amplitude		-
14.006	DPT_Value_AngleRad		rad
14.007	DPT_Value_AngleDeg		°
14.008	DPT_Value_Angular_Momentum		J s
14.009	DPT_Value_Angular_Velocity		rad s-1
14.010	DPT_Value_Area		m ²
14.011	DPT_Value_Capacitance		F
14.012	DPT_Value_Charge_DensitySurface		C m-2
14.013	DPT_Value_Charge_DensityVolume		C m-3
14.014	DPT_Value_Compressibility		m ² N-1
14.015	DPT_Value_Conductance		S = Ω-1
14.016	DPT_Value_Electrical_Conductivity		S m-1
14.017	DPT_Value_Density		kg m-3
14.018	DPT_Value_Electric_Charge		C
14.019	DPT_Value_Electric_Current		A
14.020	DPT_Value_Electric_CurrentDensity		A m-2
14.021	DPT_Value_Electric_DipoleMoment		C m
14.022	DPT_Value_Electric_Displacement		C m-2

DPT 4-Byte Float / EIS 9

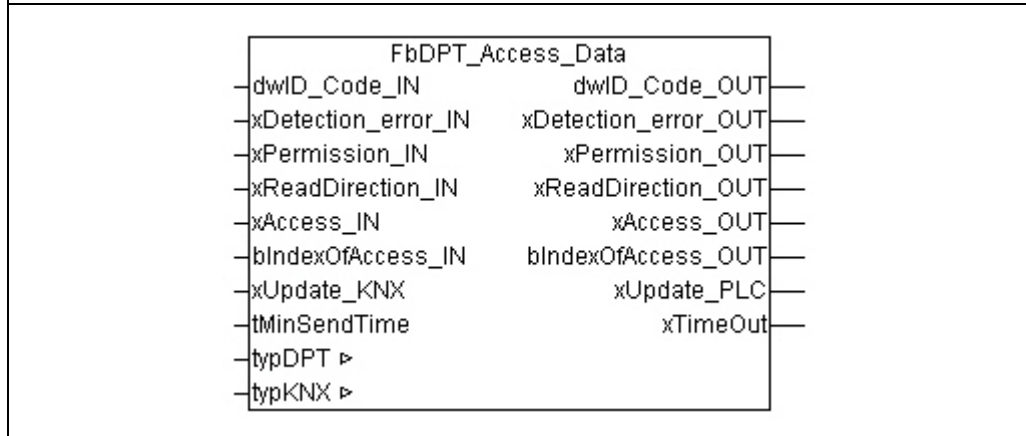
14.023	DPT_Value_Electric_FieldStrength		V m-1
14.024	DPT_Value_Electric_Flux		c
14.025	DPT_Value_Electric_FluxDensity		C m-2
14.026	DPT_Value_Electric_Polarization		C m-2
14.027	DPT_Value_Electric_Potential		V
14.028	DPT_Value_Electric_PotentialDifference		V
14.029	DPT_Value_Electromagnetic_Moment		
14.030	DPT_Value_Electromotive_Force		V
14.031	DPT_Value_Energy		J
14.032	DPT_Value_Force		N
14.033	DPT_Value_Frequency		Hz = s-1
14.034	DPT_Value_Angular_Frequency		rad s-1
14.035	DPT_Value_Heat_Capacity		J K-1
14.036	DPT_Value_Heat_FlowRate		W
14.037	DPT_Value_Heat_Quantity		J
14.038	DPT_Value_Impedance		Ω
14.039	DPT_Value_Length		m
14.040	DPT_Value_Light_Quantity		J or lm s
14.041	DPT_Value_Luminance		cd m-2
14.042	DPT_Value_Luminous_Flux		lm
14.043	DPT_Value_Luminous_Intensity		cd
14.044	DPT_Value_Magnetic_FieldStrength		A m-1
14.045	DPT_Value_Magnetic_Flux		Wb
14.046	DPT_Value_Magnetic_FluxDensity		T
14.047	DPT_Value_Magnetic_Moment		A m2
14.048	DPT_Value_Magnetic_Polarization		T
14.049	DPT_Value_Magnetization		A m-1
14.050	DPT_Value_MagnetomotiveForce		A
14.051	DPT_Value_Mass		kg
14.052	DPT_Value_MassFlux		kg s-1
14.053	DPT_Value_Momentum		N s-1
14.054	DPT_Value_Phase_AngleRad		rad
14.055	DPT_Value_Phase_AngleDeg		°
14.056	DPT_Value_Power		W
14.057	DPT_Value_Power_Factor		cos Φ
14.058	DPT_Value_Pressure		Pa = N m-2
14.059	DPT_Value_Reactance		Ω
14.060	DPT_Value_Resistance		Ω
14.061	DPT_Value_Resistivity		Ωm
14.062	DPT_Value_SelfInductance		H
14.063	DPT_Value_SolidAngle		sr
14.064	DPT_Value_Sound_Intensity		W m-2
14.065	DPT_Value_Speed		m s-1
14.066	DPT_Value_Stress		Pa = N m-2

14.067	DPT_Value_Surface_Tension		N m-1
14.068	DPT_Value_Common_Temperature		°C
14.069	DPT_Value_Absolute_Temperature		K
14.070	DPT_Value_TemperatureDifference		K
14.071	DPT_Value_Thermal_Capacity		J K-1
14.072	DPT_Value_Thermal_Conductivity		W m-1 K-1
14.073	DPT_Value_ThermoelectricPower		V K-1
14.074	DPT_Value_Time		s
14.075	DPT_Value_Torque		N m
14.076	DPT_Value_Volume		m3
14.077	DPT_Value_Volume_Flux		m3s-1
14.078	DPT_Value_Weight		N
14.079	DPT_Value_Work		J

DPT 4-Byte Access / EIS 12

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_Access_Data	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
dwID_Code_IN	DWORD	Card or key number
xDetection_error_IN	BOOL	Read error
xPermission_IN	BOOL	Access permission 0 = NO 1 = YES
xReadDirection_IN	BOOL	Read direction 0 = left to right 1 = right to left
xAccess_IN	BOOL	Access data decoded 0 = NO 1 = YES
bIndexofAccess_IN	BYTE	Index for access identification
xUpdate_KNX	BOOL	Initiate telegram update
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
dwID_Code_OUT	DWORD	Card or key number
xDetection_error_OUT	BOOL	Read error
xPermission_OUT	BOOL	Access permission 0 = NO 1 = YES
xReadDirection_OUT	BOOL	Read direction 0 = left to right 1 = right to left
xAccess_OUT	BOOL	Access data decoded 0 = NO 1 = YES

bIndexOfAccess_OUT	BYTE	Index for access identification
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection

Graphical illustration:**Function description:**

This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).

The two function blocks are synchronized via the variable structure "**typKNX**" and must therefore be linked with one another.

The function block can be used either for sending or receiving object values.

Sending:

A value change at inputs "**dwID_Code_IN**", "**xDetection_error_IN**", "**xPermission_IN**", "**xReadDirection_IN**", "**xAccess_IN**" or "**bIndexOfAccess_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

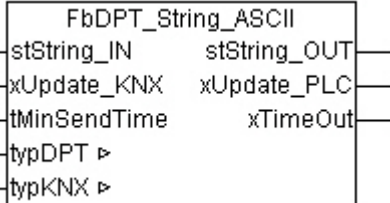
If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**dwID_Code_OUT**", "**xDetection_error_OUT**", "**xPermission_OUT**", "**xReadDirection_OUT**", "**xAccess_OUT**" or "**bIndexOfAccess_OUT**" outputs. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:			
ID :	Name :	[min ...max]	Unit:
15.000	DPT_Access_Data dwID_Code xDetection_error xPermission xReadDirection xAccess bIndexOfAccess		

DPT 14-Byte (String) / EIS 15

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Services	
Name:	FbDPT_xxx (see list of supported types)	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	KNX_Standard.lib / KNX_Advanced.lib	
Used for:	Programmable fieldbus controllers (not 750-837, 750-838, 750-812 / 814 / 815 / 816)	
Input parameters:	Data type:	Description:
stString_IN	STRING (14)	Input character
xUpdate_KNX	BOOL	Initiate telegram update
tMinSendTime	TIME	Parameter value for MinSendTime Default = t#40ms
Input / output parameters	Data type:	Description:
typDPT	typDPT	KNX object value as RAW DATA for potential saving as RETAIN variable.
typKNX	typKNX	KNX transmit and receive data (internal) See FbKNX_Master_646 for description
Output parameters	Data type:	Description:
stString_OUT	STRING (14)	Output character
xUpdate_PLC	BOOL	Telegram received at KNX object
xTimeOut	BOOL	Timeout detection
Graphical illustration, example of DPT_String_ASCII:		
		
Function description:		
<p>This function block is used for data exchange with a KNX object for module 753-646, or for KNX controller 750-849, and may only be used together with a KNX master function block (FbKNX_Master_xxx).</p> <p>The two function blocks are synchronized via the variable structure "typKNX" and must therefore be linked with one another.</p> <p>The function block can be used either for sending or receiving object values.</p>		

Sending:

A value change at input "**stString_IN**" causes a telegram to be transmitted to the KNX module/controller. Sending can also be forced by a rising edge being present at the "**xUpdate_KNX**" input.

The minimum time interval for sending of telegrams can be defined for the function block using the parameter "**tMinSendTime**", allowing the volume of telegram traffic to be reduced with frequently changing signals.

Receiving:

If the function block is used for receiving data (output), the data received from the module/controller is signaled at the "**stString_OUT**" output. The non-scaled values for the received data are provided as a "**typDPT**" IN_OUT variable. This offers the user the possibility of also saving the values as a RETAIN variable, allowing the output values to be retained after a controller reset.

A telegram update, initiated by a KNX group address, is signaled at output "**xUpdate_PLC**". The variable will then switch to TRUE for one program cycle.

With time-out monitoring activated for a KNX object (see KNX plug-in), violation (exceeding) of the monitoring time is indicated by a signal at output "**xTimeOut**".

The above description applies to the following DPTs:

ÎD :	Name:	[min ... max]	Unit:
16.000	DPT_String_ASCII		
16.001	DPT_String_8859_1		



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