

Library Description



DMX_02.lib **WAGO DMX Library**

Version 1.0.0

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Number Notation

Table 1: Number Notation







Number System	Example	Comment
Decimal	100	Normal notation
Hexadecimal	0x64	C notation
Binary	'100' '0110.0100'	In quotation marks, nibble separated by a period

Font Conventions

Table 2: Font Conventions

Font Type	Explanation
<i>italic</i>	Names of paths and files are displayed in italics, e.g.: <i>C:\Programs\WAGO-I/O-CHECK</i>
Menu	Menu options are displayed in bold, e.g.: Save
>	A “greater than” symbol between two names denotes the selection of a menu option, e.g.: File > New
Input	Designation of input or optional fields are displayed in bold, e.g.: Start of measurement range
“Value”	Input or selection values are displayed in quotation marks, e.g.: Enter the value “4 mA” under Start of measurement range .
[Button]	Button labels within the dialogs are bold and enclosed in square brackets, e.g.: [Input]
[Key]	Key labels on the keyboard are displayed in bold and enclosed in square brackets, e.g.: [F5]

Symbols

DANGER	Warning against personal injury!
	Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.
DANGER	Do not work on components while energized!
	Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Warning against personal injury!
	Indicates a moderate-risk, potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Warning against personal injury!
	Indicates a low-risk, potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Warning: Damage to property!
	Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.
ESD (Electrostatic Discharge)	Warning: Damage to property caused by electrostatic discharge (ESD)!
	Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.
Note	Important note!
	Indicates a potential malfunction which will not result in damage to property, however, if not avoided.
Information	Additional Information
	Refers to additional information which is not an integral part of this documentation (e.g., the Internet).

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The sample applications described in this documentation represent concepts, that is, technically feasible applications. Whether these concepts can actually be implemented depends on various guidelines. For example, different versions of the hardware or software components can require different handling than that described here. Therefore, the descriptions contained in this documentation do not form the basis for assertion of a certain product characteristic.

Responsibility for safe use of a specific software or hardware configuration lies with the party that produces or operates the configuration. This also applies when one of the concepts described in this document was used for implementation of the configuration.

WAGO Kontakttechnik GmbH & Co. KG assumes no liability for the realization of these concepts.

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1 Communication Module

1.1 DMX Master Module (FbDMX_652_Master)

WAGO-I/O-PRO V2.3 Library Elements		
Category:	Building technology	
Name:	FbDMX_652_Master	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	DMX_02.lib	
Applicable to:	See Release Note	
Libraries used:	SerComm.lib Serial_Interface_01.lib.	
Input Parameter:	Data Type:	Comment:
bCOM_PORT_NR	BYTE	No. of the serial interface used Default setting= 2 1 -> internal service interface 2 -> first connected serial I/O module 3 -> second connected serial I/O module
bPortDMX	BYTE	Indicates which DMX universe is to be addressed Default: 1 Value range: 1 to DMX_MAX
iNumberOfChannel	INT	Number of channels to be transmitted Default: 21 Value range: 1 to 512
xBlackOut	BOOL	TRUE-> Shutdown mode active
xReset	BOOL	Resetting and reinitializing the master
Output Parameter:	Data Type:	Comment:
bFeedback	BYTE	Response byte (see Table 1 in the appendix)
Graphical Illustration:		
<pre> graph LR subgraph FbDMX_652_Master direction TB bCOM_PORT_NR[bCOM_PORT_NR] bPortDMX[bPortDMX] iNumberOfChannel[iNumberOfChannel] xBlackOut[xBlackOut] xReset[xReset] bFeedback[bFeedback] end </pre>		

Function Description:

The **FbDMX_652_Master** function block transmits values to a DMX line. Communication takes place via an RS-485 interface module (750-652). This function block may be used only once per installed serial I/O module.

The fieldbus controller detects and assigns the port numbers of the connected serial I/O modules independently from the left beginning with COM2. The service interface on the controller is always COM1. To address the function block to the proper RS-485 I/O module, the corresponding number (e.g. "2" for COM2) must be entered as a constant at the "**bCOM_PORT_NR**" input.

The DMX universe is specified at the "**bPortDMX**" input.

The maximum number of channels to be transmitted can be limited at the "**iNumberOfChannel**" input.

The "**xBlackOut**" input activates the Shutdown mode.

- "**xBlackOut**" = TRUE -> Shutdown mode is activated. The DMX universe values of channel 1 to "**iNumberOfChannel**" remain at zero.
- "**xBlackOut**" = FALSE -> Shutdown mode is not activated. The DMX values that have been entered become effective.

A positive edge at the "**xReset**" input resets the module to its original state and reinitializes the connection.

In the event of a communication error, a corresponding error code is output on the "**bFeedback**" output.

1.2 DMX Slave Module (FbDMX_652_Slave)

WAGO-I/O-PRO V2.3 Library Elements		
Category:	Building technology	
Name:	FbDMX_652_Slave	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of library:	DMX_02.lib	
Applicable to:	See Release Note	
Libraries used:	SerComm.lib Serial_Interface_01.lib.	
Input Parameter:	Data Type:	Comment:
bCOM_PORT_NR	BYTE	No. of the serial interface used Default setting= 2 1 -> internal service interface 2 -> 1st connected serial I/O module 3 -> 2nd connected serial I/O module
bPortDMX	BYTE	Indicates which DMX universe is to be addressed Default: 1 Value range: 1 to DMX_MAX
iStartChannel	INT	Start channel of the channels to be received Default: 1 Value range: 1 to 512
xReset	BOOL	Resetting and reinitializing the master
Output Parameter:	Data Type:	Comment:
bFeedback	BYTE	Response byte (see Table 1 in the appendix)
Graphical Illustration:		

Function Description:

The **FbDMX_652_Slave** function block serves to receive values from a DMX line. Communication takes place via an RS-485 interface module (750-652). This function block may be used only once per installed serial I/O module.

The fieldbus controller detects and assigns the port numbers of the connected serial I/O modules independently from the left beginning with COM2. The service interface on the controller is always COM1. To address the function block to the proper RS-485 I/O module, the corresponding number (e.g., "2" for COM2) must be entered as a constant at the "**bCOM_PORT_NR**" input.

The DMX universe is specified at the "**bPortDMX**" input.

The input "**iStartChannel**" specifies the first read DMX channel. This starting channel must be similar with the configuration of the serial I/O module. The serial I/O module can be configured with *WAGO-I/O-CHECK*. Including the starting channel number, up to 21 consecutive channels can be read.

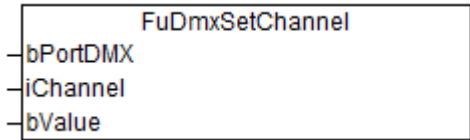
The DMX values are read out starting from the start index specified at the "**iStartChannel**" input. Please note that the value at the "**iStartChannel**" input does not lead to configuration of the start channel number of the serial I/O module. The start channel number must be executed with *WAGO-I/O-CHECK*.

A positive edge at the "**xReset**" input resets the module to its original state and reinitializes the connection.

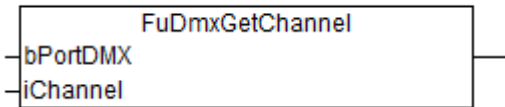
In the event of a communication error, a corresponding error code is output on the "**bFeedback**" output.

2 Channel Values

2.1 Setting Channel Values (FuDmxSetChannel)

WAGO-I/O-PRO V2.3 Library Elements		
Category:	Building technology	
Name:	FuDmxSetChannel	
Type:	Function <input checked="" type="checkbox"/>	Function block <input type="checkbox"/> Program <input type="checkbox"/>
Name of library:	DMX_02.lib	
Applicable to:	See Release Note	
Libraries used:	SerComm.lib Serial_Interface_01.lib.	
Input Parameter:	Data Type:	Comment:
bPortDMX	BYTE	Indicates which DMX universe is to be addressed Default: 1 Value range: 1 to DMX_MAX
iChannel	INT	Address of the DMX channel Value range: 1 to 512
bValue	BYTE	DMX value
Output Value:	Data Type:	Comment:
FuDmxSetChannel	BOOL	TRUE = Channel is set.
Graphical Illustration:		
		
Function Description:		
<p>Values can be written to a DMX channel with the FuDmxWriteChannel module.</p> <p>The DMX universe is specified at the “bPortDMX” input.</p> <p>The DMX channel for the transmission is selected with the “iChannel” input.</p> <p>The DMX value to be transmitted is specified at the “bValue” input.</p>		

2.2 Reading out Channel Values (FuDmxGetChannel)

WAGO-I/O-PRO V2.3 Library Elements		
Category:	Building technology	
Name:	FuDmxGetChannel	
Type:	Function <input checked="" type="checkbox"/>	Function block <input type="checkbox"/> Program <input type="checkbox"/>
Name of library:	DMX_02.lib	
Applicable to:	See Release Note	
Libraries used:	SerComm.lib Serial_Interface_01.lib.	
Input Parameter:	Data Type:	Comment:
bPortDMX	BYTE	Indicates which DMX universe is to be addressed Default: 1 Value range: 1 to DMX_MAX
iChannel	INT	Address of the DMX channel Value range: 1 to 512
Output Value:	Data Type:	Comment:
FuDmxGetChannel	BYTE	DMX value
Graphical Illustration:		
		
Function Description:		
Values of a DMX channel can be read out with the FuDmxGetChannel module. The DMX universe is specified at the “ bPortDMX ” input. The DMX channel for receiving is selected with the “ iChannel ” input. The channel number must be in the range, which is configured in the master function block.		

3 Appendix

3.1 Feedback (bFeedback)

Table 1: Feedback

Feedback	ID Number (hex)
DMX_OK	16#00
This library is not supported by the firmware.	16#01
COM port outside of valid range.	16#02
This function block entity is not yet assigned to a COM port.	16#03
This function block entity is assigned to a different COM port.	16#04
COM port already open.	16#05
COM port already closed.	16#06
COM port not opened.	16#07
A write operation is still active (COM1).	16#08
These transfer parameters are not supported by the COM port.	16#09
Current I/O module settings could not be read.	16#0A
This library version does not support temporary setting of communication parameters.	16#0B
I/O module could not be initialized.	16#0C
Error during writing of data to the I/O module FIFO memory.	16#0D
Contents of FIFO memory were not sent (continuous sending).	16#0E
Internal error	16#0F
DMX frame invalid	16#80
DMX timeout	16#81
DMX port number outside of valid range	16#8F

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