

Library Description



**WAGO-I/O-
PRO V2.3**

SMI_163x_01.lib **WAGO-I/O-PRO Library for the SMI** **Master-Module 753-163x**

Version 1.0.7

© 2017 by WAGO Kontakttechnik GmbH & Co. KG
All rights reserved.

WAGO Kontakttechnik GmbH & Co. KG

Hansastraße 27
D-32423 Minden

Phone: +49 (0) 571/8 87 – 0

Fax: +49 (0) 571/8 87 – 1 69

Email: info@wago.com

Online: <http://www.wago.com>

Technical Support

Phone: +49 (0) 571/8 87 – 5 55

Fax: +49 (0) 571/8 87 – 85 55

Email: support@wago.com

Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

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 document are generally protected by trademark or patent.

Information about This Documentation

Copyright

This documentation, including all figures and illustrations contained therein, is subject to copyright protection. Any use of this documentation that infringes upon the copyright provisions stipulated herein is prohibited. Reproduction, translation, electronic and phototechnical filing/archiving (e.g., photocopying), as well as any amendments require the written consent of WAGO Kontakttechnik GmbH & Co. KG, Minden, Germany. Non-observance will entail the right of claims for damages.

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	Descriptions 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 “4mA” 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]
“Name”	Names of input/output parameters are shown in bold italics within quotation marks, e.g.: “ <i>bModule_753_163x</i> ”

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**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 but one which will not result in damage to property if not avoided.

Information**Additional information**

Refers to additional information which is not an integral part of this documentation (e.g., the Internet).

Legal Principles

Subject to Change

WAGO Kontakttechnik GmbH & Co. KG reserves the right to make any alterations or modifications that serve to increase the efficiency of technical progress. WAGO Kontakttechnik GmbH & Co. KG owns all rights arising from granting patents or from the legal protection of utility patents. Third-party products are always mentioned without any reference to patent rights. Thus, the existence of such rights cannot be excluded.

Personnel Qualification

The use of the product described in this document is exclusively geared to specialists having qualifications in PLC programming, electrical specialists or persons instructed by electrical specialists who are also familiar with the appropriate current standards.

Moreover, the persons cited here must also be familiar with all of the products cited in this document, along with the operating instructions. They must also be capable of correctly predicting any hazards which may not arise until the products are combined.

WAGO Kontakttechnik GmbH & Co. KG assumes no liability resulting from improper action and damage to WAGO products and third-party products due to non-observance of the information contained in this document.

Limitation of Liability

This documentation describes the use of various hardware and software components in specific example applications. The components may represent products or parts of products from different manufacturers. The respective operating instructions from the manufacturers apply exclusively with regard to intended and safe use of the products. The manufacturers of the respective products are solely responsible for the contents of these instructions.

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.

Table of Contents

1	Function blocks.....	7
1.1	Communication	7
1.1.1	SMI Master (FbSMI_Master_163x)	7
1.2	Blind Function Block	9
1.2.1	Blind Controller (FbSMI_Motor_163x)	9
1.3	Addressing	14
1.3.1	Automatic Search and Addressing (FbSMI_Address_163x)	14
1.3.2	Writing the Slave Address (FbSMI_SlaveAdr_Write_163x)	17
1.3.3	Reading the SlaveID (FbSMI_SlaveId_Read_163x).....	19
1.3.4	Searching for a Slave ID (FbSMI_SlaveId_Search_163x))	21
1.3.5	System Image (FbSMI_SystemImage_163x)	23
1.4	Basic Function Blocks	25
1.4.1	Diagnosis (FbSMI_Diagnostic_163x)	25
1.4.2	DOWN (FbSMI_Down_163x)	27
1.4.3	UP (FbSMI_Up_163x)	29
1.4.4	STOP (FbSMI_Stop_163x)	31
1.4.5	Step DOWN (FbSMI_Step_Down_163x)	33
1.4.6	Step UP (FbSMI_Step_Up_163x)	35
1.4.7	Move to Position (FbSMI_Move_Pos_163x).....	37
1.4.8	Move to Position 1 (FbSMI_Move_Pos1_163x).....	39
1.4.9	Move to Position 2 (FbSMI_Move_Pos2_163x).....	40
1.4.10	Move to Position with Lamella Shift (FbSMI_Move_Pos_Turn_163x).....	41
1.4.11	Read Position (FbSMI_Read_Pos_163x)	43
1.4.12	Read Position 1 (FbSMI_Read_Pos1_163x)	45
1.4.13	Read Position 2 (FbSMI_Read_Pos2_163x)	46
1.4.14	Write Position 1 (FbSMI_Write_Pos1_163x)	47
1.4.15	Write Position 2 (FbSMI_Write_Pos2_163x)	48
1.4.16	Read Manufacturer ID (FbSMI_Read_Syn_163x).....	49
1.5	Parametrization Function Blocks	50
1.5.1	Read Parameters (FbSMI_Read_Par_163x).....	51
1.5.2	Write Parameters (FbSMI_Write_Par_163x)	53
2	Visualization Elements.....	55
2.1	SMI Configuration Interface (visuSMI_Configuration).....	55
2.2	SMI I/O Module Parameterization (visuSMI_ModulSettings_163x)	58
3	Data Types	61
3.1	eSMI_Error_163x.....	61
3.2	typSMI_SlaveID_163x.....	62
4	Appendix	63
4.1	Creating a Visualization Page.....	63
4.2	Manufacturer ID	64
4.3	Feedback from the FbSMI_Address_163x Module	64
4.4	Feedback from the FbSMI_Master_163x Module	64

Modules

1 Function blocks

1.1 Communication

1.1.1 SMI Master (FbSMI_Master_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Master_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Libraries used:	Standard.lib SysLibMem.lib SysLibSockets.lib SYSLIBCALLBACK.LIB WagoLibKBUS.lib WagoLibMBX_01.lib WAGO_Grafik_01.lib		
Applicable to:	All controller		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xSmiEnableEnergySaverMode	BOOL	Puts the SMI I/O module into energy saving mode	
Output Parameter:	Data Type:	Comment:	
bSmiMasterFeedback	BYTE	Processing status of the master module see Section 4.4	
xSmiEnergySaverMode	BOOL	Status of the energy saving mode TRUE = Energy saving mode active FALSE = Energy saving mode inactive	
xStateDigIn	BOOL	Status of the digital input of the SMI I/O module TRUE = digital input high FALSE = digital input low	
Graphical illustration:			
<div><div>FbSMI_Master_163x</div><div><div>bModule_753_163x</div><div>bSmiMasterFeedback</div><div>xSmiEnableEnergySaverMode</div><div>xSmiEnergySaverMode</div><div>xStateDigIn</div></div></div>			

Function description:

The **FbSMI_Master_163x** function block is required for connection of the SMI master module (753-1630) and the SMI master module LoVo (753-1631) to the WAGO-I/O-SYSTEM. The relative number of the inserted SMI I/O module 753-163x is selected via the “**bModule_753_163x**” input.

This function block detects all queued commands of the other SMI function blocks in the program and causes their execution. The commands are made available in the form of a data table via the global variable **g_typSMI**. The variable **g_typSMI** contains all relevant call parameters and data for the receiving telegrams/telegrams that are to be sent for communication with the SMI I/O module.

The FBSMI_Master_163x function block enables access to the WAGO-SMI-configurator while the PLC is running.

The SMI I/O module can be put into energy saving mode via the “**xSmiEnableEnergySaverMode**” input. If the SMI I/O module is in energy saving mode, you can exit energy saving mode via the following travel commands:

- DOWN
- UP
- STOP
- Step DOWN
- Step UP
- Move into position
- Move into position 1
- Move into position 2

Sending additional SMI commands is disabled. If a travel command is sent, there must be a rising edge at the “**xSmiEnableEnergySaverMode**” input to change the SMI I/O module to energy saving mode.

The current status of the energy saving mode of the SMI I/O module is displayed via the “**xSmiEnergySaverMode**” output.

Via the “**xSmiEnergySaverMode**” output, the current status of the energy saving mode of the SMI I/O module is displayed.

An error can be identified by the current processing status (see Section 4.4) that is displayed at the “**bSmiMasterFeedback**” output.

The “**xStateDigIn**” output signals the status of the digital input of the SMI I/O module.

Note:

All SMI function blocks should be called up in cycles within the same program task as the FbSMI_Master_163x function block.

The assignment of SMI I/O modules to the FbSMI_Master_163x module must be performed with constants; otherwise run-time errors can occur.

1.2 Blind Function Block

1.2.1 Blind Controller (FbSMI_Motor_163x)



WARNING

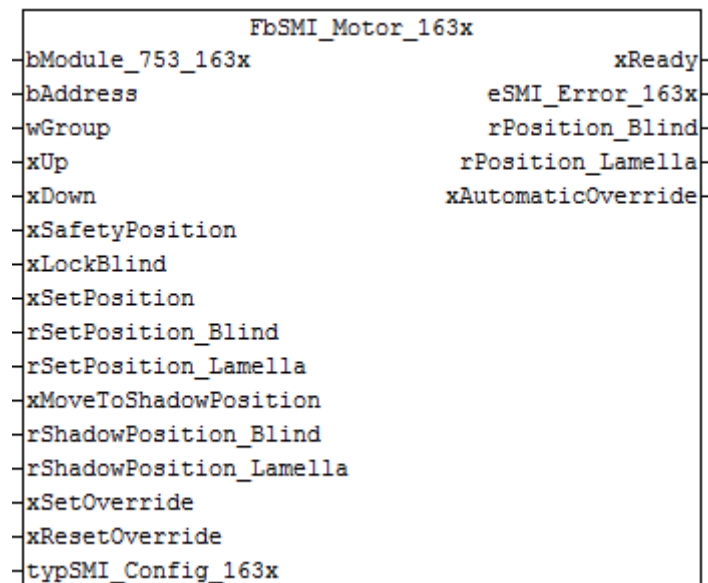
Do not send movement commands in PLC mode when controller lock is active!

The movement commands executed via the SMI Configurator have higher priority than any controller lock set in the PLC software. Therefore, it is possible to move the SMI drives even when the controller lock is active. This only applies if the SMI Configurator is connected to an SMI master module via PLC mode. Any time you send movement commands with the SMI Configurator via PLC mode, first check whether the controller lock is active. Do not send movement commands with the SMI Configurator as long as the controller lock is active.

WAGO-I/O-PRO Library Elements

Category:	Building technology		
Name:	FbSMI_Motor_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
bAddress	BYTE	Slave address	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
xUp	BOOL	Switch command Blind/Lamella UP	
xDown	BOOL	Switch command Blind/Lamella DOWN	
xSafetyPosition	BOOL	Signal input: Safety position	
xLockBlind	BOOL	Blind lock	
xSetPosition	BOOL	Move into position	
rSetPosition_Blind	REAL	Height position of the blind [%] 0 % = upper end position 100 % = lower end position	
rSetPosition_Lamella	REAL	Lamella position of the blind [%] 0 % = lamella open 100 % = lamella closed	
xMoveToShadowPosition	BOOL	Move to shadow position	
rShadowPosition_Blind	REAL	Height position of the blind [%] 0 % = upper end position 100 % = lower end position	

rShadowPosition_Lamella	REAL	Lamella position of the blind [%] 0 % = lamella open 100 % = lamella closed
xSetOverride	BOOL	Set the manual override
xResetOverride	BOOL	Reset the manual override
typSMI_Config_163x	typSMI_Config_163x	SMI configuration data
.xAutoMoveUp	BOOL	Automatically move up after completing the manual override. Default setting = FALSE
.bRadMechanicReverse	BYTE	Compensation for the mechanical dead time Default setting = 0 °
.bType	BYTE	Blind type Default setting = 1
.tShortPressTime	TIME	Time for a short button push Default setting = t#500ms
.tDisableAutomatic	TIME	Time until the manual override is automatically reset Default setting = t#60m
.rAngle_of_Tilt	REAL	Total travel angle of the lamella from completely open to completely closed [°] Default setting = 90°
.bRaf_MotorStep	BYTE	Motor shifts by x angular degrees with short push of button Default setting = 10°
Output Parameter:	Data Type:	Comment:
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1
rPosition_Blind	REAL	Position of the blind [%]
rPosition_Lamella	REAL	Position of the lamella [%]
xAutomaticOverride	BOOL	Manual override

Graphical illustration:**Function description:**

The **FbSMI_Motor_163x** function block controls blinds with an SMI interface. The function block provides the following control functions:

- UP/DOWN motion command and lamella adjustment
- Move to a defined shadow position
- Move to a defined lamella position
- Moving to safety position with locking feature (e.g. wind alarm)
- Blind lock
- Selection possibility between manual/automatic mode
- Acknowledgement of the blind position

This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “**bModule_753_163x**” input.

The two inputs “**bAddress**” and “**wGroup**” define whether the function block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Random addressing

bAddress = SlaveAdr (0-15)

wGroup = 0

Group addressing

bAddress = 0

wGroup = bit-coded (e.g., 2#0000 0000 0001 0001 for slave addresses 0 and 4)

The SMI drive is controlled by two button inputs: “**xUp**” and “**xDown**.” An extended button press on one of these inputs (longer than the configured time, “**typSMI_Config_163x.tShortPressTime**”) causes the motor to move to the upper or lower end

position (configured at the drive). If the input signal is shorter than the configured time, a STOP telegram or a telegram for adjusting the lamellas is transmitted.

The configurable safety position of the blind can be controlled via the “***xSafetyPosition***” input (e.g., for the wind alarm). When the blind has been moved to the safety position, it cannot be manually controlled until the “***xSafetyPosition***” input has been reset. For safety reasons, the function block sends the UP motion command periodically (every 3 minutes) if the safety position is activated.

The “***xLockBlind***” input can be used to lock the blind control. Current motion commands are not canceled. If the “***xLockBlind***” input is TRUE, the blind can only be moved to the safety position (e.g., for the wind alarm).

A rising edge at the “***xSetPosition***” input means that a motion command to the positions specified at the “***rSetPosition_Blind***” and “***rSetPosition_Lamella***” inputs is executed.

The “***xMoveToShadowPosition***” input is primarily used to move the blind to a shadow position. If the signal at this input is TRUE, the drive moves to the configured height and lamella angle position (“***rShadowPosition_Blind***” and “***rShadowPosition_Lamella***”). The height position is always approached from below to ensure a unique lamella position. Changes to values at the “***rShadowPosition_Blind***” and “***rShadowPosition_Lamella***” inputs are carried out as long as the “***xMoveToShadowPosition***” input signal is TRUE. A minimum value change of 5 % is taken into account as the hysteresis.

The automatic sun protection function can be overridden. In other words, new commands via the “***xMoveToShadowPosition***,” “***rShadowPosition_Blind***” and “***rShadowPosition_Lamella***” inputs are not evaluated. The automatic sun protection is overridden for the configured time “***typSMI_Config.tDisableAutomatic***” if:

- a) a motion command was initiated via one of the inputs “***xUp***” or “***xDown***,”
- b) a position was approached via the “***xSetPosition***” input,
- c) the “***xSetOverride***” input with signal TRUE is connected. It should be noted that the timer does not run out until the signal is switched to FALSE again. This means that the automatic sun protection can be overridden longer than the set time.

The automatic sun protection can be terminated early via a signal TRUE at the “***xResetOverride***” input. If the input is permanently set to TRUE, the override function is disabled. After terminating the override, the blind moves to the position specified by the automatic sun protection.

In addition, manual override is reset by signals on the “***xLockBlind***” and “***xSafetyPosition***” inputs.

The “***xAutomaticOverride***” output signals that the automatic sun protection function has been overridden.

Configuration parameters:

The “***typSMI_Config_163x***” input variable includes all necessary configuration parameters for motor control:

- “***typSMI_Config_163x.xAutoMoveUp***” specifies whether the UP command should be sent after completing the manual override (falling edge at the “***xAutomaticOverride***” output) or if the position of the drive should be maintained.
- “***typSMI_Config_163x.bRadMechanicReverse***” is the value in angular degree for compensation of the mechanical dead time. Due to tightening of the webbing, a dead time occurs before the lamella first responds.

- “*typSMI_Config_163x.bType*” defines the blind type and indicates how the blind moves. The blind type is identified by the position of the lamella for each direction of motion:
 - **Type 1:** down closed / up open
- “*typSMI_Config_163x.tShortPressTime*” specifies the maximum time for a short button press.
- “*typSMI_Config_163x.tDisableAutomatic*” specifies the time for overriding the automatic function.
- “*typSMI_Config_163x.rAngle_of_Tilt*” is the parameter for the possible adjustable range of the lamella angle from completely open to completely closed.
- “*typSMI_Config_163x.bRad_MotorStep*” defines by how many angular degrees the lamellas should be shifted in the event of a short button push.

Communication with the SMI I/O module is enabled when the “*xReady*” output is FALSE. After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “*eSMI_Error_163x*.”

The “*rPosition_Blind*” output returns the current position of the blind as an acknowledgement. If the function block recognizes a current motion command, the current position is requested every two seconds. If no motion command can be found on the function block, the position request recurs at 30-second intervals.

The lamella position is reported via the “*rPosition_Lamella*” output. The lamella position is not returned as a direct value from the drive, but is calculated internally by the function block. An undefined position (e.g., after resetting the controller) appears as the value 255.

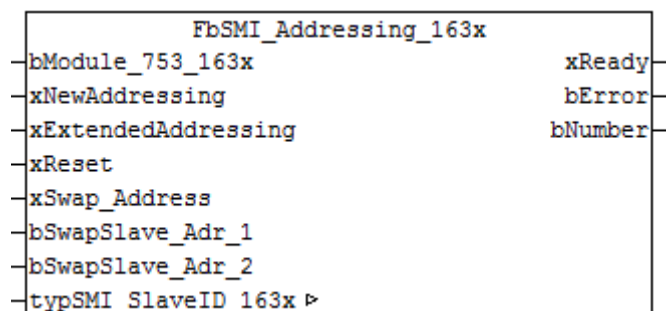
Notes:

- In group addressing, the position acknowledgement always occurs via the smallest individual address within the group, since the position request cannot be carried out using a group command. Thus, using this function block means it cannot be determined whether a group’s motors have different positions.
- The positions are always approached from below. This means that the motor initially starts a position change from a lower position than the target position so that the target position can then be reached using an UP motion command. In this way, an exact lamella position is guaranteed.
- The “*rShadowPosition_Blind*” and “*rShadowPosition_Lamella*” position parameters should always be written synchronously when the “*xMoveToShadowPosition*” input is set because a STOP command is triggered for each change in position on one of the inputs.
- The “*typSMI_Config_163x*” structure should be declared **RETAIN PERSISTENT**, so that set parameters are retained after a controller reset or a program download.
- The module currently supports blind type 1 only.

1.3 Addressing

1.3.1 Automatic Search and Addressing (FbSMI_Addresssing_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Addresssing_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xNewAddressing	BOOL	Start signal for new addressing of SMI line	
xExtendedAdressing	BOOL	Start signal for addressing SMI slaves for system extension	
xReset	BOOL	Reset or stop the addressing	
xSwap_Address	BOOL	Swap addresses.	
bSwapSlave_Adr_1	BYTE	First address swap Value range 0 ... 15	
bSwapSlave_Adr_2	BYTE	Second address swap Value range 0 ... 15	
Input/Output Param.:	Data Type:	Comment:	
typSMI_SlaveID_163x	typSMI_SlaveID_163x	Structure of the connected SMI line see Section 3.2	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
bError	BYTE	Output error code see Section 4.3	
bNumber	BYTE	Number of connected SMI drives	

Graphical illustration:**Function description:**

The **FbSMI_Addressing_163x** module is used to assign drive addresses. Each drive has a unique slave ID. It is normally unknown at commissioning and is determined automatically. Using the slave ID determined, each drive is assigned one of 16 addresses (0 ... 15).

This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “**bModule_753_163x**” input.

The following functions are carried out by the function block:

- If a rising edge is identified at the “**xNewAddressing**” input, then all drives connected to the SMI interface are assigned an address.
- When a rising edge is identified at the “**xExtendedAddressing**” input, only the newly added SMI drives are addressed.
- An ongoing addressing operation can be interrupted via a rising edge at the “**xReset**” input.
- After automatic addressing is completed, the addresses can be manually swapped or moved to an open address. A rising edge at the “**xSwap_Address**” input means that the addresses specified at the inputs “**bSwapSlave_Adr_1**” and “**bSwapSlave_Adr_2**” are swapped.

The “**typSMI_SlaveID_163x**” variable contains a list representing the relationship between the slave addresses (0 ... 15) and the 32-bit slave IDs. In addition, the list contains the manufacture ID of the drives and any comments that are assigned. This is illustrated in the following:


```

[-] typSMI_SlaveID_163x
  [-] typSMI_SlaveID_163x[0] ← Slave-Adresse = 0
    [.dwSlaveID = 16#15330001 Slave-ID = 16#15330001
    [.bManuf_ID = 16#06 Herstellercode = 6
    [.sComment = 'Motor A' Kommentar = Motor A
  [-] typSMI_SlaveID_163x[1]
    [.dwSlaveID = 16#15340001
    [.bManuf_ID = 16#06
    [.sComment = 'Motor B'
  [-] typSMI_SlaveID_163x[2]
    [.dwSlaveID = 16#15340007
    [.bManuf_ID = 16#06
    [.sComment = 'Motor C'
  [-] typSMI_SlaveID_163x[3] ← Slave-Adresse = 3
    [.dwSlaveID = 16#00000000 => ist nicht zugewiesen
    [.bManuf_ID = 16#00
    [.sComment = ''
  [+] typSMI_SlaveID_163x[4]
  [+] typSMI_SlaveID_163x[5]
  [+] typSMI_SlaveID_163x[6]
  [+] typSMI_SlaveID_163x[7]
  [+] typSMI_SlaveID_163x[8]
  [+] typSMI_SlaveID_163x[9]
  [+] typSMI_SlaveID_163x[10]
  [+] typSMI_SlaveID_163x[11]
  [+] typSMI_SlaveID_163x[12]
  [+] typSMI_SlaveID_163x[13]
  [+] typSMI_SlaveID_163x[14]
  [+] typSMI_SlaveID_163x[15]

```

Communication with the SMI I/O module is activated when the “xReady” output is FALSE. An active running addressing operation is signaled in addition. During this time, the other SMI modules are disabled in the program call. After the communication is completed, the output switches to TRUE.

Addressing errors are displayed at the output “**bError**.”

The output “**bNumber**” shows the number of drives found during the automatic addressing procedure.

Notes:

- Please note that the other SMI modules are blocked in the program call during automatic addressing. It is then impossible, for example, to stop an ongoing motion command of a drive.
- An addressing operation can take several minutes. The time depends on the number of SMI drives connected and the program cycle time. A signal change from FALSE to TRUE of the output “xReady” indicates that addressing is complete.

1.3.2 Writing the Slave Address (FbSMI_SlaveAdr_Write_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_SlaveAdr_Write_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
bManuf_Adr	BYTE	Manufacturer ID (see Section 4.2)	
dwSlave_ID	DWORD	32-bit slave ID	
bSlave_Adr	BYTE	New slave address Value range 0 ... 15	
Input/Output Param.:	Data Type:	Comment:	
none			
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_SlaveAdr_Write_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>xStart</div><div>eSMI_Error_163x</div><div>bManuf_Adr</div><div>dwSlave_ID</div><div>bSlave_Adr</div></div></div>			
Function description:			
<p>The FbSMI_SlaveAdr_Write_163x function block is used if a new slave address is to be written and the 32-bit slave ID of the motor is known. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “<i>bModule_753_163x</i>” input.</p> <p>The command for writing the slave address is sent by a rising edge at the “<i>xStart</i>” input. Manufacturer addressing must be used for this function block. The “<i>bManuf_Adr</i>” parameter</p>			

determines the manufacturer ID. The necessary and unique 32-bit slave ID of the motor must be entered at the “*dwSlave_ID*” input, and the new slave address is entered at the “*bSlave_Adr*” input.

Communication with the SMI I/O module is enabled when the “*xReady*” output is FALSE. After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “*eSMI_Error_163x*.”

1.3.3 Reading the SlaveID (FbSMI_SlaveId_Read_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_SlaveId_Read_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
bAddress	BYTE	Slave address Value range 0 ... 15	
Input/Output Param.:	Data Type:	Comment:	
none			
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
dwSlave_ID	DWORD	32-bit slave ID	
Graphical illustration:			
<div><div>FbSMI_SlaveId_Read_163x</div><div><div>bModule_753_163x</div><div>xStart</div><div>bAddress</div><div>xReady</div><div>eSMI_Error_163x</div><div>dwSlave_ID</div></div></div>			
Function description:			
<p>The FbSMI_SlaveId_Read_163x module is used to read the 32-bit slave ID of an address. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “<i>bModule_753_163x</i>” input.</p> <p>The command for reading the slave ID is sent by a rising edge at the “<i>xStart</i>” input. The read out slave ID is displayed at the “<i>dwSlave_ID</i>” output.</p> <p>Communication with the SMI I/O module is enabled when the “<i>xReady</i>” output is FALSE. After the communication is completed, the output switches to TRUE.</p> <p>An error can be identified by the current communication status as displayed at output</p>			

<i>“eSMI_Error_163x.”</i>

1.3.4 Searching for a Slave ID (FbSMI_SlaveId_Search_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_SlaveID_Search_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
bManuf_Adr	BYTE	Manufacturer ID (see Section 4.2)	
dwSearch_ID	DWORD	Search specification for the 32-bit slave ID Default setting = 16#80000000	
Input/Output Param.:	Data Type:	Comment:	
none			
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
xLT	BOOL	There are shorter slave IDs.	
xGT	BOOL	There are longer slave IDs.	
xEQ	BOOL	The slave ID being searched for exists.	
xNO_Adr	BOOL	The slave address of the drive is 0.	
Graphical illustration:			
<div><div>FbSMI_SlaveId_Search_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>xStart</div><div>eSMI_Error_163x</div><div>bManuf_Adr</div><div>xLT</div><div>dwSearch_ID</div><div>xGT</div><div>xEQ</div><div>xNO_Adr</div></div></div>			
Function description:			
The FbSMI_SlaveId_Search_163x module is used to identify an individual slave ID of an SMI drive. This module can only be used with the SMI Master module (FbSMI Master 163x).			

The relative number of the inserted SMI I/O module 753-163x is selected via the “***bModule_753_163x***” input.

The command for searching for a slave ID is sent by a rising edge at the “***xStart***” input. Manufacturer addressing must be used for this function block. The “***bManuf_Adr***” parameter determines the manufacturer ID. The slave ID being searched for must be specified at the “***dwSearch_ID***” input.

The outputs “***xLT***,” “***xGT***” and “***xEQ***” indicate whether there are motors in the SMI installation that have a shorter, longer or identical slave ID as the number specified at the “dwSearch_ID” input. Relevant algorithms can therefore be used to identify all activated slave IDs of the SMI motors.

A TRUE signal at the “***xNO_Adr***” output signals that all motors in the SMI installation have a slave address of 0. The system thus has an initialization stage, since the default slave address of the SMI motors is always 0 in its initial state.

Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE. After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “***eSMI_Error_163x***.”

1.3.5 System Image (FbSMI_SystemImage_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_SystemImage_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
bAddress	BYTE	Slave address	
xReadSystemImage	BOOL	A rising edge starts the command to read the system image.	
xWriteComments	BOOL	A rising edge starts the command to write the comments.	
xDeleteAddress	BOOL	A rising edge starts the command to delete a missing SMI drive.	
Input/Output Param.:	Data Type:	Comment:	
typSMI_SlaveID_163x	typSMI_SlaveID_163x	Structure of the connected SMI line see Section 3.2	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_SystemImage_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>bAddress</div><div>eSMI_Error_163x</div><div>xReadSystemImage</div><div>xWriteComments</div><div>xDeleteAddress</div><div>typSMI_SlaveID_163x ▶</div></div></div>			
Function description:			
The FbSMI_SystemImage_163x module is used to create or edit a current image of the SMI drives connected to the SMI I/O module 753-163x. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module			

753-163x is selected via the “***bModule_753_163x***” input.

The following functions are carried out by the function block in the order given below (if multiple queries are pending simultaneously):

- If a rising edge is detected on the “***xWriteComments***” input, the command to write the comments contained in the “***typSMI_SlaveID_163x***” input/output is sent.
- If a rising edge is detected on the “***xReadSystemImage***” input, the command to read the system image is sent.
- If a rising edge is detected on the “***xDeleteAddress***” input, the SMI address on the “***bAddress***” input is deleted from the system image if it was identified as missing from the SMI I/O module 163x by a cyclic scan.

Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE. After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “***eSMI_Error_163x***.”

1.4 Basic Function Blocks

1.4.1 Diagnosis (FbSMI_Diagnostic_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Diagnostic_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
eSMI_Diagnostic_163x	eSMI_Diagnostic_163x	Response to diagnostic command <ul style="list-style-type: none">- SMI_163x_IDLE- SMI_163x_UP_DOWN_STOP- SMI_163x_UP_DOWN- SMI_163x_UP_STOP- SMI_163x_ALL_UP- SMI_163x_DOWN_STOP- SMI_163x_ALL_DOWN- SMI_163x_ALL_STOP- SMI_163x_INVALID	
xMotor_Failure	BOOL	Drive error display	
Graphical illustration:			
<div><div>FbSMI_Diagnostic_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>xStart</div><div>eSMI_Error_163x</div><div>xManufacturer</div><div>eSMI_Diagnostic_163x</div><div>bAddress</div><div>xMotor_Failure</div></div></div>			

Function description:

The FbSMI_Diagnostic_163x function block makes it possible to initiate the request for an SMI diagnostic response. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “*bModule_753_163x*” input.

The request for a diagnostic response is initiated by a rising edge at the “*xStart*” input.

The two inputs “*xManufacturer*” and “*bAddress*” define whether the function block communicates with one or several SMI drives. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1-15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0-15

Communication with the SMI I/O module is enabled when the “*xReady*” output is FALSE. After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “*eSMI_Error_163x*.”

The “*eSMI_Diagnostic_163x*” output returns the diagnostic response. The response can be used to deduce which motion commands (if any) are to be executed. A readout is also performed to detect a possible drive failure. The status of this request is displayed at the “*xMotor_Failure*” output.

1.4.2 DOWN (FbSMI_Down_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Down_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_Down_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>xStart</div><div>eSMI_Error_163x</div><div>xManufacturer</div><div>bAddress</div><div>wGroup</div></div></div>			
Function description:			
<p>The FbSMI_Down_163x function block sends the command for the DOWN motion command. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “<i>bModule_753_163x</i>” input.</p> <p>The command is sent by a rising edge at the “<i>xStart</i>” input.</p> <p>The three inputs “<i>xManufacturer</i>.” “<i>bAddress</i>” and “<i>wGroup</i>” specify whether the function</p>			

block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1 ... -15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE. After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “***eSMI_Error_163x.***”

1.4.3 UP (FbSMI_Up_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Up_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_Up_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>xStart</div><div>eSMI_Error_163x</div><div>xManufacturer</div><div>bAddress</div><div>wGroup</div></div></div>			
Function description:			
<p>The FbSMI_Up_163x function block sends the command for the UP motion command. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “bModule_753_163x” input.</p> <p>The command is sent by a rising edge at the “xStart” input.</p> <p>The three inputs “xManufacturer,” “bAddress” and “wGroup” specify whether the function</p>			

block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1 ... 15 (see 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE. After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “***eSMI_Error_163x.***”

1.4.4 STOP (FbSMI_Stop_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Stop_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All programmable fieldbus controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_Stop_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>xStart</div><div>eSMI_Error_163x</div><div>xManufacturer</div><div>bAddress</div><div>wGroup</div></div></div>			
Function description:			
<p>The FbSMI_Stop_163x module services to stop the movement of a drive. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “<i>bModule_753_163x</i>” input.</p> <p>The command is sent by a rising edge at the “<i>xStart</i>” input.</p> <p>The three inputs “<i>xManufacturer</i>,” “<i>bAddress</i>” and “<i>wGroup</i>” specify whether the function block communicates with one or several SMI drives. Performing group addressing is</p>			

prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1 ... 15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “*xReady*” output is FALSE.

After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output

“*eSMI_Error_163x*.”

1.4.5 Step DOWN (FbSMI_Step_Down_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Step_Down_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
bRad	BYTE	Drive shifts down by x angular degrees	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_Step_Down_163x</div><div><div><div>bModule_753_163x</div><div>xStart</div><div>xManufacturer</div><div>bAddress</div><div>wGroup</div><div>bRad</div></div><div><div>xReady</div><div>eSMI_Error_163x</div></div></div></div>			
Function description:			
<p>The FbSMI_Step_Down_163x function block sends the command to shift the lamella. If the command is sent, the drive is shifted downward by the angular degree set at the “bRad” input. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “bModule 753 163x” input.</p>			

The command is sent by a rising edge at the “***xStart***” input.

The three inputs “***xManufacturer***,” “***bAddress***” and “***wGroup***” specify whether the function block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1 ... 15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE.

After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output

“***eSMI_Error_163x***.”

1.4.6 Step UP (FbSMI_Step_Up_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Step_Up_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
bRad	BYTE	Drive shifts up by x angular degrees	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_Step_Up_163x</div><div><div>-bModule_753_163x</div><div>-xStart</div><div>-xManufacturer</div><div>-bAddress</div><div>-wGroup</div><div>-bRad</div></div><div><div>xReady-</div><div>eSMI_Error_163x-</div></div></div>			
Function description:			
<p>The FbSMI_Step_Up_163x function block sends the command to shift the lamella. If the command is sent, the drive is shifted upwards by the angular degree set at the “bRad” input. The function block can only be used with the SMI master function block (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “bModule 753 163x” input.</p>			

The command is sent by a rising edge at the “***xStart***” input.

The three inputs “***xManufacturer***,” “***bAddress***” and “***wGroup***” specify whether the function block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1 ... 15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE.

After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output

“***eSMI_Error_163x***.”

1.4.7 Move to Position (FbSMI_Move_Pos_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Move_Pos_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
rPosition	REAL	Position 0 ... 100 [%] 0 % = upper end position 100 % = lower end position	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_Move_Pos_163x</div><div><div>-bModule_753_163x</div><div>-xStart</div><div>-xManufacturer</div><div>-bAddress</div><div>-wGroup</div><div>-rPosition</div></div><div><div>xReady</div><div>eSMI_Error_163x</div></div></div>			
Function description:			
The FbSMI_Move_Pos_163x function block moves a drive’s position. If the command is sent, the drive is shifted to the position indicated at the “ rPosition ” input. This module can only be used with the SMI Master module (FbSMI Master 163x). The relative number of the inserted			

SMI I/O module 753-163x is selected via the “***bModule_753_163x***” input.

The command is sent by a rising edge at the “***xStart***” input.

The three inputs “***xManufacturer***,” “***bAddress***” and “***wGroup***” specify whether the function block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1-15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE.

After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output

“***eSMI_Error_163x***.”

1.4.8 Move to Position 1 (FbSMI_Move_Pos1_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Move_Pos1_163x, FbSMI_Move_Pos2_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div><div>FbSMI_Move_Pos1_163x</div><div><div>bModule_753_163x</div><div>xStart</div><div>xManufacturer</div><div>bAddress</div><div>wGroup</div></div><div><div>xReady</div><div>eSMI_Error_163x</div></div></div></div> <div><div>FbSMI_Move_Pos2_163x</div><div><div>bModule_753_163x</div><div>xStart</div><div>xManufacturer</div><div>bAddress</div><div>wGroup</div></div><div><div>xReady</div><div>eSMI_Error_163x</div></div></div>			
Function description:			
<p>The FbSMI_Move_Pos1_163x and FbSMI_Move_Pos2_163x function blocks are used to move the drive to one of the two positions that were configured at the drive. If the command is sent, the drive is shifted to the configured position. This modules may only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “bModule_753_163x” input.</p> <p>The command is sent by a rising edge at the “xStart” input.</p>			

The three inputs “***xManufacturer***,” “***bAddress***” and “***wGroup***” specify whether the function block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1 ... 15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE.

After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output

“***eSMI_Error_163x***.”

1.4.9 Move to Position 2 (FbSMI_Move_Pos2_163x)

See description Move to Position 1 (FbSMI_Move_Pos1_163x)

1.4.10 Move to Position with Lamella Shift (FbSMI_Move_Pos_Turn_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Move_Pos_Turn_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
rPosition	REAL	Position 0 ... 100 [%] 0 % = upper end position 100 % = lower end position	
bRad	BYTE	Drive shifts down by x angular degrees	
xTurn_Up_Down	BOOL	Direction of adjustment of the lamella opening angle TRUE = angle adjustment downwards FALSE = angle adjustment upwards etc.	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
Graphical illustration:			
<div><div>FbSMI_Move_Pos_Turn_163x</div><div><div>bModule_753_163x</div><div>xReady</div></div><div><div>xStart</div><div>eSMI_Error_163x</div></div><div><div>xManufacturer</div><div></div></div><div><div>bAddress</div><div></div></div><div><div>rPosition</div><div></div></div><div><div>bRad</div><div></div></div><div><div>xTurn_Up_Down</div><div></div></div></div>			

Function description:

The **FbSMI_Move_Pos_Turn_163x** function block is used to move the drive to the height position. After it reaches the height position, the lamella opening angle can be adjusted. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “**bModule_753_163x**” input.

A sequence command (two commands in one telegram) is sent to the SMI drive by a rising edge at the “**xStart**” input. The commands are executed by the SMI drive one after the other. First, the motion command is executed to the height position indicated at the “**rPosition**” input. The lamella opening angle is then adjusted to the angle set at the “**rRad**” input. The direction of the lamella adjustment is defined by the value at the “**xTurn_Up_Down**” input.

The two inputs “**xManufacturer**” and “**bAddress**” define whether the function block communicates with one or several SMI drives. The following addressing types are possible:

Broadcast

xManufacturer = TRUE
bAddress = 0

Manufacturer addressing

xManufacturer = TRUE
bAddress = Manufacturer ID 1 ... 15 (see Section 4.2)

Random addressing

xManufacturer = FALSE
bAddress = 0 ... 5

Communication with the SMI I/O module is enabled when the “**xReady**” output is FALSE. After the communication is completed, the output switches to TRUE.
An error can be identified by the current communication status as displayed at output “**eSMI_Error_163x**.”

1.4.11 Read Position (FbSMI_Read_Pos_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Read_Pos_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
bAddress	BYTE	Slave address	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
rPosition	REAL	Position 0 ... 100 [%] 0 % = upper end position 100 % = lower end position	
Graphical illustration:			
<div><div>FbSMI_Read_Pos_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>xStart</div><div>eSMI_Error_163x</div><div>bAddress</div><div>rPosition</div></div></div>			
Function description:			
<p>The FbSMI_Read_Pos_163x function block requests the current position of a blind. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “bModule_753_163x” input.</p> <p>The command for reading out the current position is sent to the SMI drive by a rising edge at the “xStart” input. The position value is displayed at the “rPosition” output. Reading out the position is only possible for random addressing. The slave address (0-15) that is to be read out is indicated at the “bAddress” input.</p> <p>Communication with the SMI I/O module is enabled when the “xReady” output is FALSE. After the communication is completed, the output switches to TRUE.</p> <p>An error can be identified by the current communication status as displayed at output</p>			

<i>“eSMI_Error_163x.”</i>

1.4.12 Read Position 1 (FbSMI_Read_Pos1_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Read_Pos1_163x, FbSMI_Read_Pos2_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
bAddress	BYTE	Slave address	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
rPosition	REAL	Position 0 ... 100 [%] 0 % = upper end position 100 % = lower end position	
Graphical illustration:			
<div><div><div>FbSMI_Read_Pos1_163x</div><div>bModule_753_163x</div><div>xStart</div><div>bAddress</div><div>xReady</div><div>eSMI_Error_163x</div><div>rPosition</div></div><div><div>FbSMI_Read_Pos2_163x</div><div>bModule_753_163x</div><div>xStart</div><div>bAddress</div><div>xReady</div><div>eSMI_Error_163x</div><div>rPosition</div></div></div>			
Function description:			
<p>The function blocks FbSMI_Read_Pos1_163x and FbSMI_Read_Pos2_163x request the values from both fixed positions that were configured at the drive. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “<i>bModule_753_163x</i>” input.</p> <p>The command for reading out the fixed position is sent by a rising edge at the “<i>xStart</i>” input. The position value is displayed at the “<i>rPosition</i>” output. Reading out the position is only possible for random addressing. The slave address (0 ... 15) that is to be read out is indicated at the “<i>bAddress</i>” input.</p> <p>Communication with the SMI I/O module is enabled when the “<i>xReady</i>” output is FALSE. After the communication is completed, the output switches to TRUE.</p> <p>An error can be identified by the current communication status as displayed at output</p>			

<i>“eSMI_Error_163x.”</i>

1.4.13 Read Position 2 (FbSMI_Read_Pos2_163x)

See description Read Position 1 (FbSMI_Read_Pos1_163x)

1.4.14 Write Position 1 (FbSMI_Write_Pos1_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Write_Pos1_163x, FbSMI_Write_Pos2_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
rPosition	REAL	Position 0 ... 100 [%] 0 % = upper end position 100 % = lower end position	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
rPosition	REAL	Position 0 ... 100 [%] 0 % = upper end position 100 % = lower end position	
Graphical illustration:			
<div><div><div>FbSMI_Write_Pos1_163x</div><div>bModule_753_163x</div><div>xStart</div><div>xManufacturer</div><div>bAddress</div><div>wGroup</div><div>rPosition</div><div>xReady</div><div>eSMI_Error_163x</div></div><div><div>FbSMI_Write_Pos2_163x</div><div>bModule_753_163x</div><div>xStart</div><div>xManufacturer</div><div>bAddress</div><div>wGroup</div><div>rPosition</div><div>xReady</div><div>eSMI_Error_163x</div></div></div>			

Function description:

The function blocks **FbSMI_Write_Pos1_163x** and **FbSMI_Write_Pos2_163x** write both fixed positions that were configured at the drive. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “**bModule_753_163x**” input.

The command for writing the fixed position is sent by a rising edge at the “**xStart**” input. The position value is indicated at the “**rPosition**” input and stored by the SMI drive as a parameter.

The three inputs “**xManufacturer**,” “**bAddress**” and “**wGroup**” specify whether the function block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1-15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “**xReady**” output is FALSE. After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “**eSMI_Error_163x**.”

1.4.15 Write Position 2 (FbSMI_Write_Pos2_163x)

See description Write Position 1 (FbSMI_Write_Pos1_163x)

1.4.16 Read Manufacturer ID (FbSMI_Read_Syn_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Read_Syn_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
bAddress	BYTE	Slave address	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
bManufac_ID	BYTE	Manufacturer ID (see Section 4.2)	
bMotor_Type	BYTE	Motor type (manufacturer-specific)	
Graphical illustration:			
<div><div>FbSMI_Read_Syn_163x</div><div><div>bModule_753_163x</div><div>xStart</div><div>bAddress</div></div><div><div>xReady</div><div>eSMI_Error_163x</div><div>bManufac_ID</div><div>bMotor_Type</div></div></div>			
Function description:			
<p>The FbSMI_Read_Syn_163x function block reads out the manufacturer ID (see Section 4.2) and the motor type of an SMI drive. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “bModule_753_163x” input.</p> <p>The command for reading out the manufacturer ID and the motor type is sent by a rising edge at the “xStart” input. The manufacturer ID is displayed at the “bManufac_ID” output, and the motor type is displayed at the “bMotor_Type” output. Reading out these values is only possible for random addressing. The slave address (0 ... 15) that is to be read out is indicated at the “bAddress” input.</p> <p>Communication with the SMI I/O module is enabled when the “xReady” output is FALSE. After the communication is completed, the output switches to TRUE.</p> <p>An error can be identified by the current communication status as displayed at output</p>			

<i>“eSMI_Error_163x.”</i>

1.5 Parametrization Function Blocks

1.5.1 Read Parameters (FbSMI_Read_Par_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Read_Par_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
bAddress	BYTE	Slave address	
bLength	BYTE	Byte length of the parameter value that is to be read Value range: 1, 2 or 4 Default setting = 1	
wPar_Adr	WORD	Parameter address Value range: 16#00 – 16#FFF	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	
dwParameter	DWORD	Parameter value	
Graphical illustration:			
<div><div>FbSMI_Read_Par_163x</div><div><div>bModule_753_163x</div><div>xReady</div><div>xStart</div><div>eSMI_Error_163x</div><div>bAddress</div><div>dwParameter</div><div>bLength</div><div>wPar_Adr</div></div></div>			
Function description:			
<p>The FbSMI_Read_Par_163x function block reads manufacturer-specific parameters of the motor. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “<i>bModule_753_163x</i>” input.</p> <p>The command for reading out a slave parameter is sent by a rising edge at the “<i>xStart</i>” input. This requires the designation of the parameter address “<i>wPar_Addr</i>” and the length “<i>bLength</i>”</p>			

of the parameter value. Parameters are either 1 byte, 2 bytes or 4 bytes. Reading out the parameters is only possible for random addressing. The slave address (0 ... 15) that is to be read out is indicated at the “***bAddress***” input.

The “***dwParameter***” output returns the read out parameter value of the SMI drive.

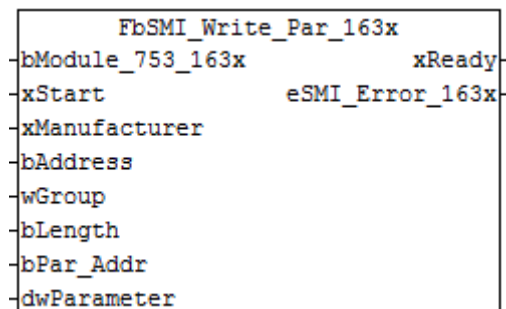
Communication with the SMI I/O module is enabled when the “***xReady***” output is FALSE.

After the communication is completed, the output switches to TRUE.

An error can be identified by the current communication status as displayed at output “***eSMI_Error_163x***.”

1.5.2 Write Parameters (FbSMI_Write_Par_163x)

WAGO-I/O-PRO Library Elements			
Category:	Building technology		
Name:	FbSMI_Write_Par_163x		
Type:	<input type="checkbox"/> Function	<input checked="" type="checkbox"/> Function block	<input type="checkbox"/> Program
Name of library:	SMI_163x_01.lib		
Applicable to:	All controllers		
Input Parameter:	Data Type:	Comment:	
bModule_753_163x	BYTE	Relative number of the inserted SMI I/O module 753-163x in the node	
xStart	BOOL	A rising edge starts the command	
xManufacturer	BOOL	Activation of manufacturer addressing	
bAddress	BYTE	Slave address or manufacturer ID	
wGroup	WORD	Group mask with binary coded slave address: Bit_0 = slave address 0 Bit_1 = slave address 1 etc.	
bLength	BYTE	Byte length of the parameter value that is to be written Value range: 1, 2 or 4 Default setting = 1	
wPar_Adr	WORD	Parameter address Value range: 16#00 – 16#0FF	
dwParameter	DWORD	Parameter value	
Output Parameter:	Data Type:	Comment:	
xReady	BOOL	TRUE = communication deactivated FALSE = communication activated	
eSMI_Error_163x	eSMI_Error_163x	Indication of communication errors see Section 3.1	

Graphical illustration:**Function description:**

The **FbSMI_Write_Par_163x** function block writes manufacturer-specific parameters into the motor. This module can only be used with the SMI Master module (FbSMI_Master_163x). The relative number of the inserted SMI I/O module 753-163x is selected via the “**bModule_753_163x**” input.

The command for writing a “**dwParameter**” drive parameter is sent by a rising edge at the “**xStart**” input. This requires the designation of the parameter address “**wPar_Addr**” and the length “**bLength**” of the parameter value. Parameters are either 1 byte, 2 bytes or 4 bytes.

The three inputs “**xManufacturer**,” “**bAddress**” and “**wGroup**” specify whether the function block communicates with one or several SMI drives. Performing group addressing is prioritized. The following addressing types are possible:

Broadcast

xManufacturer = TRUE

bAddress = 0

Manufacturer addressing

xManufacturer = TRUE

bAddress = Manufacturer ID 1 ... 15 (see Section 4.2)

Random addressing

xManufacturer = FALSE

bAddress = 0 ... 5

Group addressing

xManufacturer = TRUE

bAddress = 0

wGroup = z. B. (2#0000 0000 0001 0001) for slave addresses 0 and 4

Communication with the SMI I/O module is enabled when the “**xReady**” output is FALSE. After the communication is completed, the output switches to TRUE.

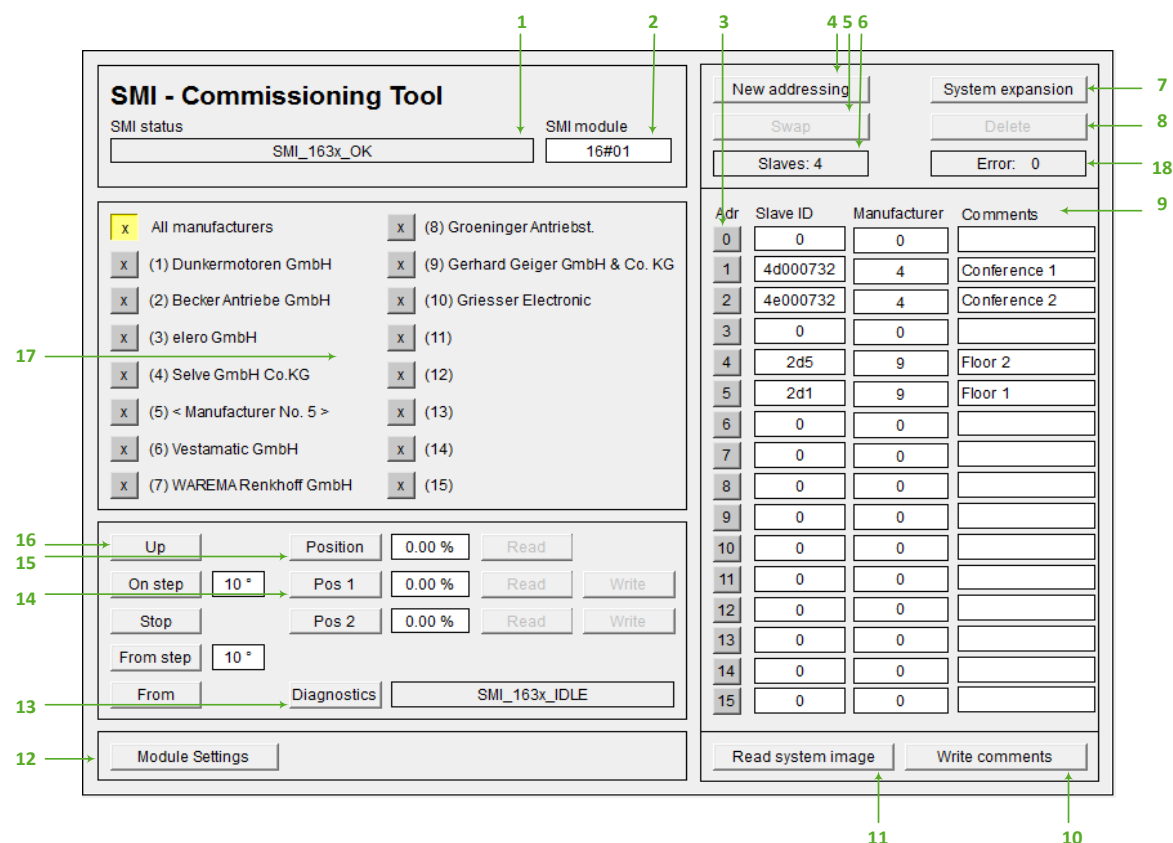
An error can be identified by the current communication status as displayed at output “**eSMI_Error_163x**.”

2 Visualization Elements

2.1 SMI Configuration Interface (visuSMI_Configuration)

WAGO-I/O-PRO Library Elements		
Category:	Building technology	
Name:	visuSMI_Configuration_163x	
Name of library:	SMI_163x_01.lib	
Applicable to:	All controllers	
Placeholder:	Data Type:	Comment:
none		

Graphical illustration:



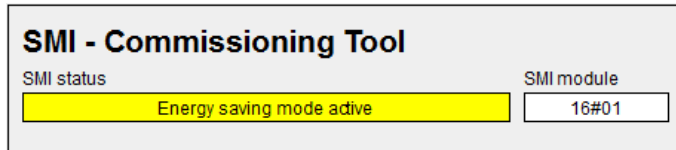
Function description:

The **visuSMI_Configuration_163x** template supports the startup of a SMI line and its drives.

PrgSMIConfig must be integrated in order to use the visualization.

This template offers the following control and display options:

- 1 Indication of the status of the SMI communication or messages of the SMI I/O module: Besides the events listed in Section 3.1, an active energy saving mode of the SMI I/O module is indicated.



- 2 The relative number of the inserted SMI I/O module 753-1963x is selected via the input field. After this in input, the user's attention is drawn to the change of bus with a security prompt, which can be acknowledged with **[Yes]** or **[Cancel]**. After the SMI I/O module is changed, the displayed list 9 is deleted, but not automatically updated. If the selected SMI I/O module is not found, the input field is highlighted in red. During a "New addressing" or "Read system image" operation, a change is not possible. If the selected SMI I/O module is accessed via an external tool, then all elements but 1 and 2 are grayed out, and "External access to the module" is output.
- 3 Button to select the drives: The button labeling corresponds to the slave address of the selected drive. Different functions can be used in the startup tool depending on the number of drives selected.
- 4 For **[New addressing]**, the existing list 9 including comments is deleted, and all drives connected to the SMI I/O module receive a new address depending on their slave ID. To start new addressing, the button must be pressed for at least one second. The operation can take several minutes depending on the drives connected.
- 5 The **[Swap]** button is used to sort the drives. The button is only enabled if two drives are selected.
- 6 The number of drives found is shown in **[Slaves]**.
- 7 The **[System expansion]** is used when drives are to be added to an existing list or when removed drives are to be deleted. If the system expansion is started after replacing a drive, the new drive is written to the old address, and the comments are included.
- 8 The **[Delete]** button is only active if at least one drive was marked as missing by "Read system image" ("Missing" is displayed in the comments) and one is selected via 3.
- 9 For "New addressing" and "Read system image," the drives found appear in a list. It contains the assigned slave address, the slave ID and the manufacturer ID. To improve clarity, a comment on the installation location can be added (max. 12 characters) to each drive. The comments indicate drives that are not found ("Missing") or address conflicts ("Conflict").
- 10 The **[Write comments]** button causes all comments in list 9 to be written to the system image. Individual selection of the comments is not possible.
- 11 The **[Read comments]** button updates all display fields in list 9. The displayed system image corresponds to the current status of the SMI line.
- 12 Open field for creating a navigation bar
- 13 The **[Diagnostics]** button can be used to query which motion commands are executed directly. Multiple namings are possible in the neighboring display field, e.g., "SMI_163x_UP_STOP" means at least one drive moves up and at least one drive stays. Only the "SMI_163x_ALL_xxx" messages affect all drives.
- 14 Pressing the **[Pos 1]** or **[Pos 2]** button moves the drives to the position saved in the

drive. The **[Read]** buttons in the associated input fields cause the saved values to be displayed as percentages. The input fields and **[Write]** buttons can be used to save new values to a drive. The read and write functions are only enabled if an individual drive is selected. The buttons are otherwise disabled.

- 15** The **[Position]** button can be used to move the drives to the position entered as a percentage in the neighboring field. The neighboring **[Read]** button can be used to display the current position of a drive.
- 16** Buttons for controlling one or more drives: The **[Up]** and **[Down]** motion commands are executed until the **[Stop]** button is pressed or the respective end position is reached. For the **[Up step]** and **[Down step]** motion commands, degree values can be specified for lamella adjustment in the adjacent input field.
- 17** Buttons for manufacturer selection for controlling drives of only one manufacturer: If a drive is selected via **3**, the manufacturer selection is deactivated. If multiple drives are selected, the manufacturer can again be selected within this group.
- 18** Any errors that occur appear in the **[Error]** display and can be interpreted with the table in Section 4.3.

2.2 SMI I/O Module Parameterization (visuSMI_ModulSettings_163x)

WAGO-I/O-PRO Library Elements		
Category:	Building technology	
Name:	visuSMI_ModulSettings_163x	
Name of library:	SMI_163x_01.lib	
Applicable to:	All controllers	
Placeholder:	Data Type:	Comment:
none		

Graphical illustration:

SMI - Module Settings

SMI status: OK

SMI module: 16#01

FW Version: 1.1.19

HW Version: 1

General

☒ Globally activate diagnostics

☒ Activate internal data bus watchdog

Forced position:

- ☒ Open completely
- ☐ Close completely
- ☐ Freeze position

Internal data bus timeout and control error monitoring: 18 * 10 seconds

Logic of the input signal (break/make contact): ☐ Break contact

Drive at DO=24 V (on or off): ☒ ON

☐ In case of overrun, overwrite ring buffer data

☒ Activate auto-replace function

Selection of digital input:

- ☒ Construction site mode
- ☐ Trigger for forced position
- ☐ No function

Energy saving mode

System delay: 1500 milliseconds

Timeout: 0 minutes

Logging

Resetting log: Reset Logging

Configuration: Configuration

Factory settings: Factory settings

Read configuration: Read configuration

Write configuration: Write configuration

Function description:

The **visuSMI_ModulSettings_163x** template supports parameterization of an SMI I/O module.

PrgSMIConfig must be integrated in order to use the visualization.

This template offers the following control and display options:

- 1 Display of messages of the SMI I/O module

Besides “OK”,

- a. an active energy saving mode of the SMI I/O module

SMI - Module Settings			
SMI status	SMI module	FW Version	HW Version
Energy saving mode active	16#01	1.1.19	1

or

- b. an active connection to the SMI I/O module

SMI - Module Settings			
SMI status	SMI module	FW Version	HW Version
Please wait.	16#01	1.1.19	1

or

- c. a communication error

SMI - Module Settings			
SMI status	SMI module	FW Version	HW Version
Timeout	16#01	1.1.19	1

is displayed.

- 2 The relative number of the inserted SMI I/O module 753-1963x is selected via the input field. After this is input, a security prompt appears, since requests not yet sent to the SMI I/O module will be rejected in the event of a change of bus. After a change of SMI I/O module, the displays under “General” and “Energy saving mode” are not updated. An update is performed via 9. If the selected SMI I/O module is not found, the input field is highlighted in red. A change is not possible while a connection to the SMI I/O module is active. If the selected SMI I/O module is accessed via an external tool, then all elements but 1, 2, 3 and 4 are grayed out, and “External access to the module” is output.
- 3 Display of the firmware version of the selected SMI I/O module
- 4 Display of the hardware version of the selected SMI I/O module
- 5 If the [In case of overrun, overwrite ring buffer data] box is checked, the oldest entry in the log buffer is written if the buffer is full and another entry needs to be stored in the log. If the [In case of overrun, overwrite ring buffer data] box is unchecked, no new entry is stored in the log when it is full.
- 6 If the [Activate auto-replace function] box is checked, the SMI I/O module automatically performs an auto replace operation when the conditions for this are met. Further information on auto replace can be found in the SMI I/O module manual. If the [Activate auto-replace function] box is unchecked, no automatic replacement is performed by the SMI I/O module.
- 7 The [Selection of digital input] radio button configures the behavior in the event of a change of level specified by 15 on the CAGE CLAMP® of the SMI I/O module.
- 8 The [Write configuration] button causes the current settings under “General” and “Energy saving mode” to be written to the SMI I/O module.
- 9 The [Read configuration] button causes the current settings to be read from the SMI I/O module and the display elements under “General” and “Energy saving mode” to be updated.
- 10 The [Factory settings] button causes the settings of the SMI I/O module to be reset to the state they were in at the time of delivery and the display elements under “General”

and “Energy saving mode” to be updated.

- 11 Open field for creating a navigation bar
- 12 The **[Reset logging]** button deletes the SMI I/O module log.
- 13 The **[Timeout]** input field is used to configure the time span of the idle phase of the SMI line after which the SMI I/O module automatically goes into energy saving mode. Inputting “0 minutes” deactivates the automatic energy saving mode.
- 14 The **[System delay]** input field is used to specify the duration until readiness for operation of the start-up phase of the SMI drives.
- 15 Energy saving mode is linked to the digital output of the SMI Master Module. The digital output is controlled via the energy saving mode. The **[Drives at DO = 24 V (On or Off)]** checkbox is used to configure the behavior of the digital output, so that either 0 V or 24 V is applied at the digital output when energy saving mode is activated. If the checkbox is selected, 0 V is applied at the digital output when energy saving mode is activated.
- 16 The **[Logic of the input signal (break/make contact)]** checkbox is used to configure 1-button operation. If the box is checked when the digital input is set to 1-button operation, the input signal is interpreted as a break contact.
- 17 The **[Internal data bus timeout and control error monitoring]** input field is used to specify the time span after which the SMI I/O module detects an internal data bus or controller failure.
- 18 The **[Forced position]** radio button is used to configure its behavior if it enters a forced position (e.g., wind alarm or internal data bus failure).
- 19 The **[Activate internal data bus watchdog]** checkbox is used to configure the behavior of the SMI I/O module in the event of an internal data bus error.
- 20 The **[Globally activate diagnostics]** checkbox can be used to enable/disable the diagnostics of the SMI I/O module globally.

3 Data Types

3.1 eSMI_Error_163x

WAGO-I/O-PRO Library Elements	
Category:	Building technology
Name:	eSMI_Error_163x
Type:	Data type – enumeration
Name of library:	SMI_163x_01.lib
Applicable to:	All controllers
Enumeration value:	Comment:
SMI_163x_OK	No error during SMI communication
SMI_163x_NACK	A request is not confirmed by the SMI drive.
SMI_163x_LENGTH_ERROR	SMI I/O module message: The received message is too long for the SMI protocol.
SMI_163x_TIMEOUT	Message of the SMI I/O module: It is taking too long to receive the response from the SMI drive, or no drive that can respond exists.
SMI_163x_ECHO_ERROR	Message of the SMI I/O module: The self-receipt differs from what was sent.
SMI_163x_CRC_ERROR	Message of the SMI I/O module: The checksum of the received response is incorrect.
SMI_163x_ENERGY_SAVER_MODE_ACTIVE	Message of the SMI I/O module: Energy saving mode is active, and the command could not be executed.
SMI_163x_LOG_FAILURE	Message of the SMI I/O module: An error occurred when executing the command.
SMI_163x_LOG_EMPTY	Message of the SMI I/O module: No further log entries exist.
SMI_163x_SMIIMAGE_FAILURE	Message of the SMI I/O module: An error occurred when executing the command.
SMI_163x_UNNOWN_ERROR	Message of the SMI I/O module: An error occurred when executing the command.

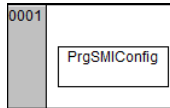
3.2 typSMI_SlaveID_163x

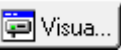

WAGO-I/O-PRO Library Elements		
Category:	Building technology	
Name:	typSMI_SlaveID_163x	
Type:	Data type – structure	
Name of library:	SMI_163x_01.lib	
Applicable to:	All controllers	
Structure Element:	Data Type:	Comment:
typSlaveID_163x[x]	ARRAY [0..15] OF typSlaveID_163x	Structure with the 32-bit slave IDs, manufacturer ID and comments
.dwSlaveID	DWORD	32-bit slave ID
.bManuf_ID	BYTE	Manufacturer ID (see Section 4.2)
.sComment	STRING(12)	Comments with at most 12 characters

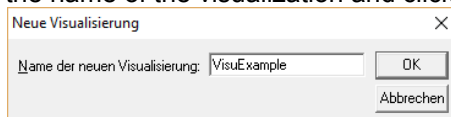
4 Appendix

4.1 Creating a Visualization Page

1. *SMI_163X_01_EN.EXP* is imported under the menu option Project → Import.
2. The **PrgSMIConfig** function block must be integrated into the program.

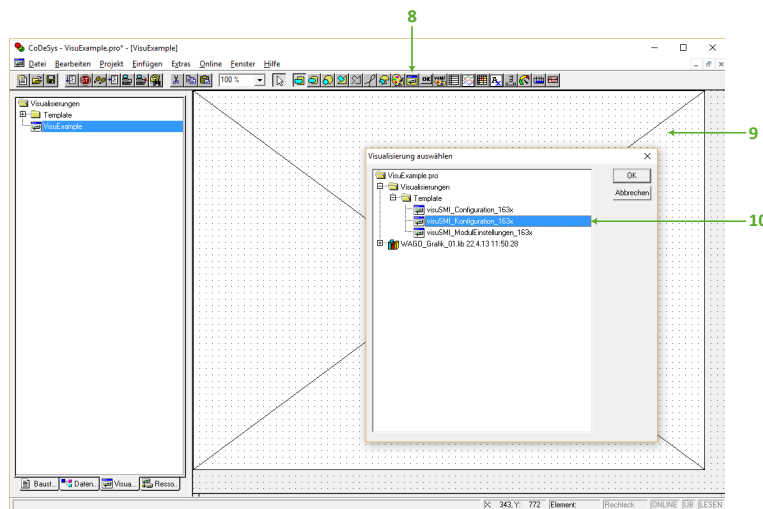


3. Click on the “Visualization”  tab (bottom left)
4. The folder  **Visualisierungen** appears at the top left.
5. Right-click on the Visualization folder.
6. Select the “Insert object ...” option
7. Specify the name of the visualization and click “OK” to

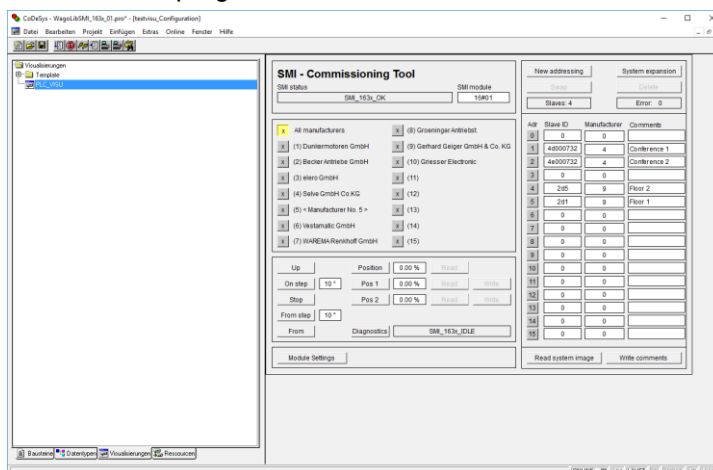


confirm.

8. Open the “Visualization” button
9. Specify the frame for the configuration interface (entire white area)
10. Select the corresponding template from the “Select visualization” menu



11. View after the program download



4.2 Manufacturer ID

0	Multisupplier (broadcast)
1	Alcatel SEL AG
2	Becker Antriebe GmbH
3	elero GmbH
4	Selve GmbH & Co. KG
5	<Manufacturer No. 5>
6	Vestamatic GmbH
7	WAREMA Renkhoff GmbH
8	Groeninger Antreibst.
9	Gerhard Geiger GmbH & Co. KG
10	Griesser Electronic
11	<Manufacturer No. 11>
12	<Manufacturer No. 12>
13	<Manufacturer No. 13>
14	<Manufacturer No. 14>
15	<Manufacturer No. 15>

4.3 Feedback from the FbSMI_Addressing_163x Module

0	No error
7	User abort
8	Automatic swap of addresses failed
10	Manual swap of addresses failed
12	General communication error
20	Error occurred during the system expansion
21	No conflict in the system image during the system expansion

4.4 Feedback from the FbSMI_Master_163x Module

0	No error
100	Address incorrect
108	Mailbox is not initialized
110	External access to the SMI I/O module
113	Register communication enabled
114	I/O module is addressed

WE! INNOVATE!

WAGO Kontakttechnik GmbH & Co. KG
Postfach 2880 • D-32385 Minden
Hansastraße 27 • D-32423 Minden
Phone: +49 (0) 571/8 87 – 0
Fax: +49 (0) 571/8 87 – 1 69
Email: info@wago.com
Web: <http://www.wago.com>

