

Library Description



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



RomutecModbusRTU_04.lib

**WAGO-I/O-PRO Library for
Connecting the Romutec Door-
Mounted Station via MODBUS
RTU**

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 single quotes, nibble separated by a period

Font Conventions

Table 2: Font Conventions

Font Type	Explanation
<i>italic</i>	Names of paths and files are shown in italics, e.g.: <i>C:\Programs\WAGO-I/O-CHECK</i>
Menu	Menu options are shown in bold, e.g.: Save
>	A “greater than” symbol between two names denotes the selection of a menu option, e.g.: File > New
Input	Names of input or selection fields are shown in bold, e.g.: Start of measurement range
“Value”	Input or selection values are shown 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 shown 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 against damage to property!

Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

ESD



Warning against damage to property caused by electrostatic discharge!

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

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Moreover, the persons named 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.

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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 general conditions. For example, different versions of the hardware or software components may require different handling than that described here. Therefore, the descriptions contained in this documentation do not form the basis for assertion of a particular product characteristic.

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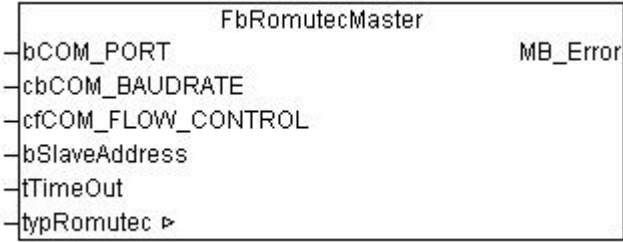
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Function Blocks:

1. BUS-tec MOD

1.1. FbRomotecMaster


WAGO-I/O-PRO CAA Library Elements			
Category:	Building technology		
Name:	FbRomotecMaster		
Type:	Function <input type="checkbox"/>	Function block X <input checked="" type="checkbox"/>	Program <input type="checkbox"/>
Name of Library:	RomotecModbusRTU_04.lib		
Applicable to:	See Release Note.		
Libraries Used:	SerComm.lib Serial_Interface_01.lib. mod_com.lib Modb_i05.lib		
Input Parameters:	Data Type:	Comment:	
bCOM_PORT	BYTE	No. of the serial interface used 1 -> Internal service interface 2 ->1st connected serial interface 3 ->2nd connected serial interface	
cbCOM_BAUDRATE	COM_BAUD RATE	Baud rate: BAUD_1200: = 120 BAUD_2400: = 240 BAUD_4800: = 480 BAUD_9600: = 960 BAUD_19200: = 1920 Default = BAUD_9600	
cfCOM_FLOW_CONTROL	COM_ FLOW_ CONTROL	NO_FLOW_CONTROL: = 0, XON_XSTATE2: = 1, RTS_CTS:= 2, FULLDUPLEX:= 3, HALFDUPLEX:= 4, Default = HALFDUPLEX	
bSlaveAddress	BYTE	Slave address/station number Value range 0 ... 249 Default setting = 160	
tTimeOut	TIME	Timeout for communication Value range 500 ms ... 10 min Default = t#500ms	
Input/Output Parameters:	Data Type:	Comment:	
typRomotec	typRomotec	Data exchange with the following function blocks via command and response telegrams	

Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors 16#00: = MB_NO_ERROR 16#01: = MB_NOT_SUPPORTED_FUNCTION 16#03: = MB_ILLEGAL_DATA 16#90: = MB_EXTENDED_SLAVE_ERROR 16#96: = MB_CRC_ERROR 16#97: = MB_ILLEGAL_NUMBER_OF_POINTS 16#98: = MB_OVERRUN 16#99: = MB_TIME_OUT
Graphical Illustration:		
		
Function Description:		
<p>The “FbRomutecMaster” function block can be used to connect the Romutec door station to the WAGO-I/O-SYSTEM. MODBUS communication is implemented via the serial interfaces 750-650/003-000, 750-653/003-000 or 750-652.</p> <p>The Romutec Master handles communication with the MODBUS RTU door station. The “typRomutec” variable facilitates the connection with other function blocks.</p> <p>The number of the serial interface used is set by “bCOM_PORT”.</p> <p>Example:</p> <p>1 -> Internal service interface 2 -> 1st connected serial interface 3 -> 2nd connected serial interface</p> <p>The same baud rate as is set on the BZK 1000 central module from Romutec is set at the “cbCOM_BAUDRATE” input.</p> <p>The input “cfCOM_FLOW_CONTROL” must be set in accordance with the interface used as follows:</p> <p>RS-232 -> NO_FLOW_CONTROL RS-485 -> HALFDUPLEX</p> <p>The station number of the configured BZK 1000 central module is set at “bSlaveAddress”. The default setting for the central module is 160</p> <p>If the waiting time for a response telegram “tTimeOut” is exceeded, an error message is issued.</p>		

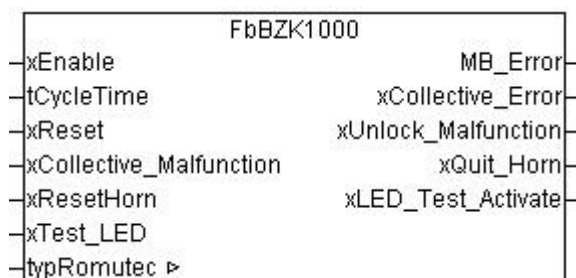
To identify an error, the current error code is displayed at the output ***“MB_Error”***. The enumeration ***“MB_Error”*** is in Modb_i05.lib.

This function block may be used only once per BZK 1000 central module. All other Romutec MODBUS RTU function blocks must be linked with this function block via the input variable ***“typRomutec”***.

1.2. BZK1000 Central MODBUS Module

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBZK1000	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xReset	BOOL	Unlock switch command malfunction
xCollective_Malfunction	BOOL	Switch command collective fault
xResetHorn	BOOL	Acknowledge horn switch command.
xTest_LED	BOOL	Lamp test switch command
Input/Output Parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
xCollective_Error	BOOL	Collective fault output
xUnlock_Malfunction	BOOL	Push-button "Unlock malfunction" pressed
xQuit_Horn	BOOL	Push-button "Acknowledge horn" pressed
xLED_Test_Activate	BOOL	Push-button "Lamp test" pressed

Graphical Illustration:



Function Description:

The connection between the Romutec manual mode level BZK1000 and the WAGO-I/O-SYSTEM is realized with the function block **"FbBZK1000"**.

If the input **"xEnable"** is TRUE, the module is cyclically polled. The **"tCycleTime"** input parameter determines the cycle time.

The input **"xReset"** unlocks the relay for the malfunction.

A collective fault is handled by a TRUE at the input **"xCollective_Malfunction"**.

When a collective fault is triggered, the relays for the collective fault **and** the horn are activated. The relay for the horn is switched off via the input **"xResetHorn"**.

The lamp test is performed via the input **"xTest_LED"**.

The output **"xCollective_Error"** is activated when there is a collective fault.


The outputs **"xUnlock_Malfunction"**, **"xQuit_Horn"** and **"xLED_Test_Activate"** indicate the actuation of the respective push-button on the module BZK1000.

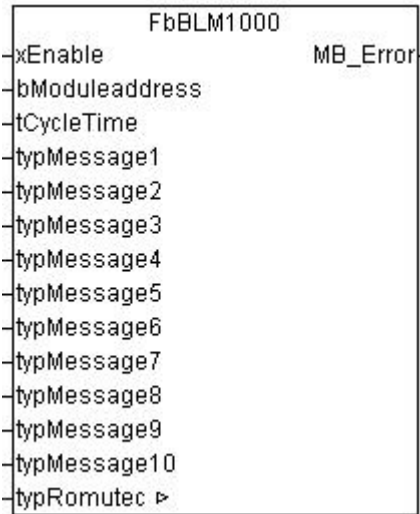
To identify an error, the current error code is displayed at the output **"MB_Error"**. The enumeration **"MB_Error"** is in Modb_i05.lib.

The **"typRomutec"** variable contains the data structure of the MP-bus telegram and must be connected to the variables with the same name on the **"FbRomutecMaster"** function block.


Note: The push-button polling is dependent on parameter **"tCycleTime"**. Now, if the push-button is pressed only during the time between two polling processes, the push-button press might not be detected.

1.3. BLM1000 Signaling Card for 10DO

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBLM1000	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
typMessage1	typLED	Control for LED 1
	.LED_Green .LED_Red Blink	
typMessage2	typLED	Control for LED 2
typMessage3	typLED	Control for LED 3
typMessage4	typLED	Control for LED 4
typMessage5	typLED	Control for LED 5
typMessage6	typLED	Control for LED 6
typMessage7	typLED	Control for LED 7
typMessage8	typLED	Control for LED 8
typMessage9	typLED	Control for LED 9
typMessage10	typLED	Control for LED 10
Input/Output Parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams

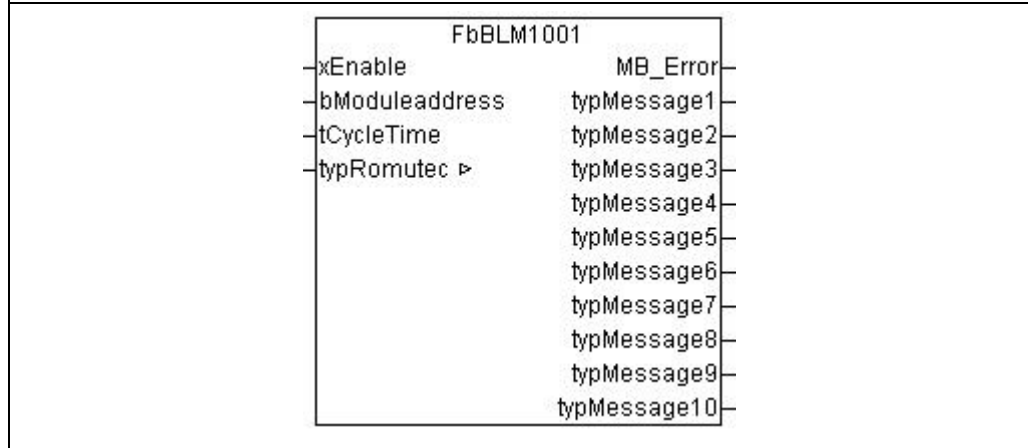
Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
Graphical Illustration:		
		
Function Description:		
<p>Function block “FbBLM1000” is used to actuate the 10 LEDs on the module BLM1000. Each LED has four different status displays (LED off, LED green, LED yellow/green, LED red).</p> <p>The inputs “typMessage1” to “typMessage10” actuate the respective LEDs. The LED color is specified via the structure “typLED”. Here, it is possible to actuate the variables “LED_RedBlink” and “LED_Green” at the same time (LED yellow/green).</p> <p>To identify an error, the current error code is displayed at the output “MB_Error”. The enumeration “MB_Error” is in Modb_i05.lib.</p> <p>The “typRomutec” variable contains the data structure of the MP-bus telegram and must be connected to the variables with the same name on the “FbRomutecMaster” function block.</p>		

1.4. BLM1001 Signaling Card for 10DI

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBLM1001	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	For data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	EnumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
typMessage1	typLED	Display status LED 1
	.LED_Green .LED_Red Blink	
typMessage2	typLED	Display status LED 2
typMessage3	typLED	Display status LED 3
typMessage4	typLED	Display status LED 4
typMessage5	typLED	Display status LED 5

typMessage6	typLED	Display status LED 6
typMessage7	typLED	Display status LED 7
typMessage8	typLED	Display status LED 8
typMessage9	typLED	Display status LED 9
typMessage10	typLED	Display status LED 10

Graphical Illustration:



Function Description:

Function block “**FbBLM1001**” is used to evaluate the status of 10 LEDs. Each LED has three different status displays (LED off, LED green, LED red).


The module addressed though “**bModuleaddress**” is cyclically polled if the input “**xEnable**” is TRUE. The “**tCycleTime**” input parameter determines the cycle time.

To identify an error, the current error code is displayed at the output “**MB_Error**”. The enumeration “**MB_Error**” is in Modb_i05.lib.

The outputs “**typMessage1**” to “**typMessage10**” indicate the LED status. Depending on the message, either variable “**LED_RedBlink**” or “**LED_Green**” is set in the structure.

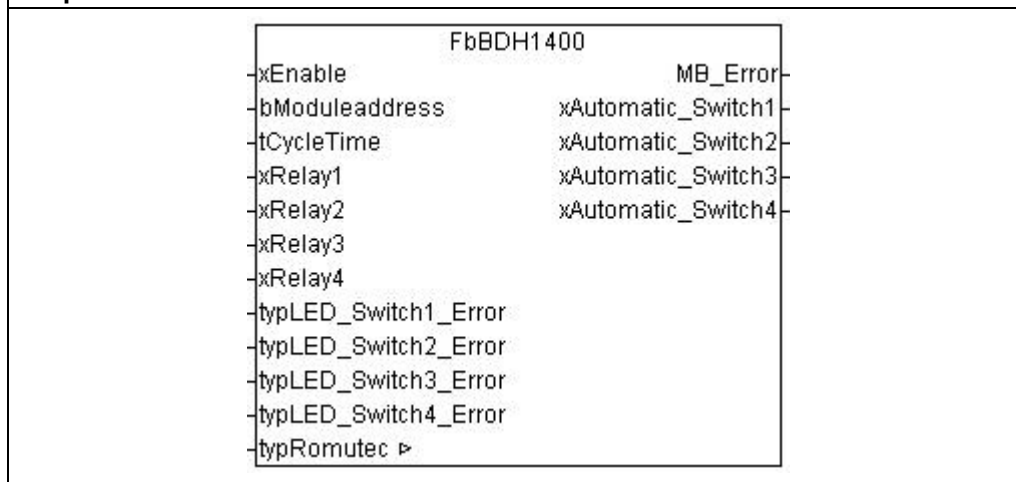
The “**typRomutec**” variable contains the data structure of the MODBUS telegram and must be connected to the variable with the same name on the “**FbRomutecMaster**” function block.

1.5. BDH1400 Digital Output Card 4 x 1DO

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH1400	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xRelay1	BOOL	Switch command relay 1
xRelay2	BOOL	Switch command relay 2
xRelay3	BOOL	Switch command relay 3
xRelay4	BOOL	Switch command relay 4
typLED_Switch1_Error	typLED	Control for error message switch 1
	.LED_Green .LED_Red Blink	
typLED_Switch2_Error	typLED	Control for error message switch 2
typLED_Switch3_Error	typLED	Control for error message switch 3
typLED_Switch4_Error	typLED	Control for error message switch 4
Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams

Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
xAutomatic_Switch1	BOOL	Automatic mode switch 1
xAutomatic_Switch2	BOOL	Automatic mode switch 2
xAutomatic_Switch3	BOOL	Automatic mode switch 3
xAutomatic_Switch4	BOOL	Automatic mode switch 4

Graphical Illustration:



Function Description:

The function block **"FbBDH1400"** is used to actuate the motor control card BDH1400, whereby the LEDs are actuated by the function block.

The module addressed through **"bModuleaddress"** is cyclically polled if the input **"xEnable"** is TRUE. The **"tCycleTime"** input parameter determines the cycle time.

In automatic mode, the relays can be actuated via inputs **"xRelay1"** to **"xRelay4"**. When automatic mode is active, the LEDs for indicating operation are actuated together with the respective relays. In manual mode, the LEDs for indicating operation are switched off.


The inputs **"typLED_Switch1_Error"** to **"typLED_Switch4_Error"** control the respective error messages. The LED color is specified via the structure **"typLED"**. Here, it is possible to actuate the variables **"LED_RedBlink"** and **"LED_Green"** at the same time (LED yellow/green).

To identify an error, the current error code is displayed at the output **"MB_Error"**. The enumeration **"MB_Error"** is in Modb_i05.lib.

A TRUE at the outputs **"xAutomatic_Switch1"** to **"xAutomatic_Switch4"** signals the respective automatic mode switch position on the module.

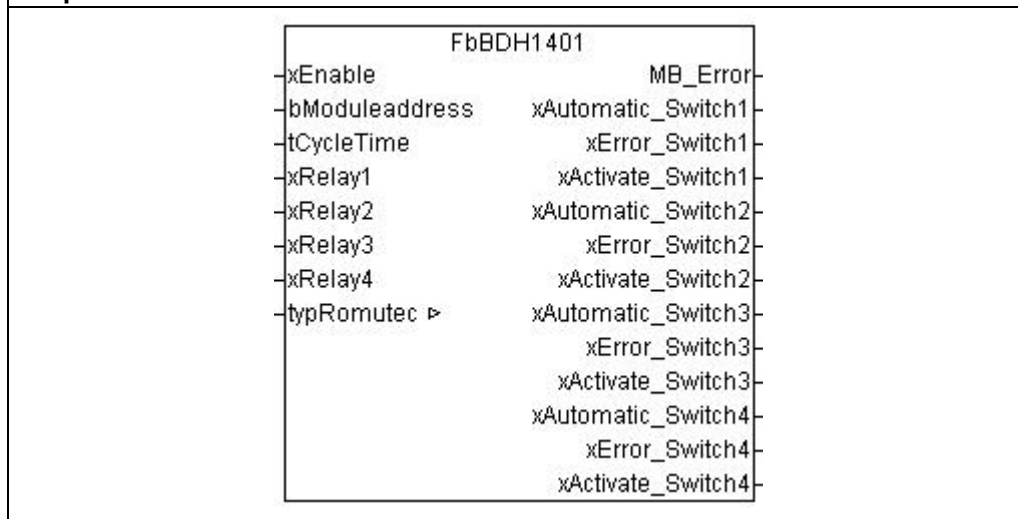
The **"typRomutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster"** function block.

1.6. BDH1401 Digital Input Card 4 x 1DO/8DI

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH1401	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xRelay1	BOOL	Actuation relay 1
xRelay2	BOOL	Actuation relay 2
xRelay3	BOOL	Actuation relay 3
xRelay4	BOOL	Actuation relay 4
Input/Output Parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	EnumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
xAutomatic_Switch1	BOOL	Automatic mode switch 1
xError1	BOOL	Error message device 1
xActivate1	BOOL	Operating condition device 1

xAutomatic_Switch2	BOOL	Automatic mode switch 2
xError_Switch2	BOOL	Error message device 2
xActivate_Switch2	BOOL	Operating condition device 2
xAutomatic_Switch3	BOOL	Automatic mode switch 3
xError_Switch3	BOOL	Error message device 3
xActivate_Switch3	BOOL	Operating condition device 3
xAutomatic_Switch4	BOOL	Automatic mode switch 4
xError_Switch4	BOOL	Error message switch 4
xActivate_Switch4	BOOL	Operating condition device 4

Graphical Illustration:



Function Description:

The function block “**FbBDH1401**” is used to actuate the motor control card BDH1401. The LEDs are actuated with + 24 VDC, which is switched via the I/O modules on the card.

The module addressed though “**bModuleaddress**” is cyclically polled if the input “**xEnable**” is TRUE. The “**tCycleTime**” input parameter determines the cycle time.

In automatic mode, the relays can be actuated via inputs “**xRelay1**” to “**xRelay4**”.


To identify an error, the current error code is displayed at the output “**MB_Error**”. The enumeration “**MB_Error**” is in Modb_i05.lib.

A TRUE at the outputs “**xAutomatic_Switch1**” to “**xAutomatic_Switch4**” signals the automatic mode switch position.

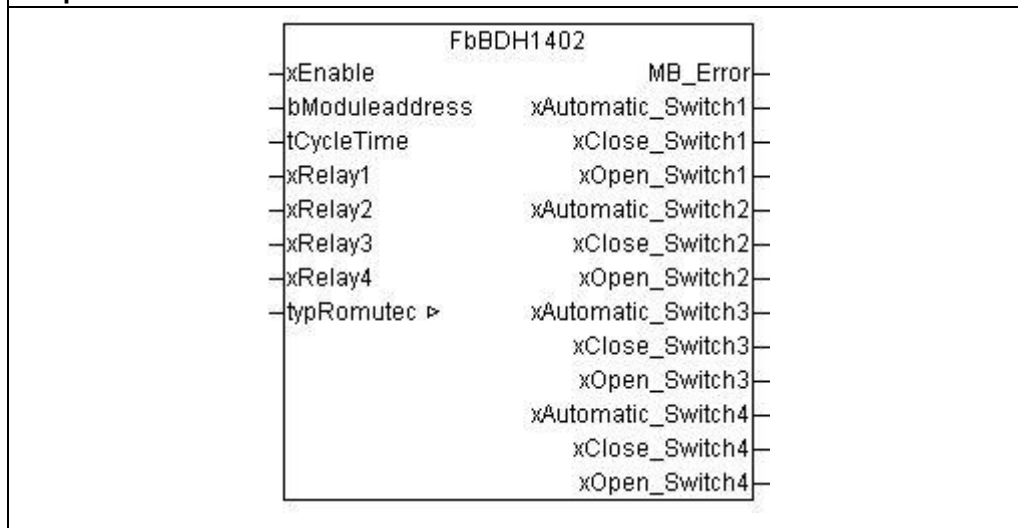
The outputs “**xError_Switch1**” to “**xError_Switch4**” indicate the status of the respective error message; the outputs “**xActivate_Switch1**” to “**xActivate_Switch4**” indicate the status of the respective operating light.

The “**typRomutec**” variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the “**FbRomutecMaster**” function block.

1.7. BDH1402 Digital Input Card 4 x 1DO/8DI

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH1402	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xRelay1	BOOL	Actuation relay 1
xRelay2	BOOL	Actuation relay 2
xRelay3	BOOL	Actuation relay 3
xRelay4	BOOL	Actuation relay 4
Input/Output Parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	EnumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
xAutomatic_Switch1	BOOL	Automatic mode switch 1
xClose_Switch1	BOOL	Valve closed, switch 1
xOpen_Switch1	BOOL	Valve open, switch 1

xAutomatic_Switch2	BOOL	Automatic mode switch 2
xClose_Switch2	BOOL	Valve closed, switch 2
xOpen_Switch2	BOOL	Valve open, switch 2
xAutomatic_Switch3	BOOL	Automatic mode switch 3
xClose_Switch3	BOOL	Valve closed, switch 3
xOpen_Switch3	BOOL	Valve open, switch 3
xAutomatic_Switch4	BOOL	Automatic mode switch 4
xClose_Switch4	BOOL	Valve closed, switch 4
xOpen_Switch4	BOOL	Valve open, switch 4

Graphical Illustration:**Function Description:**

The function block **"FbBDH1402"** is used to actuate the valve card BDH1402. The LEDs are actuated with + 24 VDC, which is switched via the bus power supply on the card.

The module addressed through **"bModuleaddress"** is cyclically polled if the input **"xEnable"** is TRUE. The **"tCycleTime"** input parameter determines the cycle time.

In automatic mode, the relays can be actuated via inputs **"xRelay1"** to **"xRelay4"**.

To identify an error, the current error code is displayed at the output **"MB_Error"**. The enumeration **"MB_Error"** is in Modb_i05.lib.

A TRUE at the outputs **"xAutomatic_Switch1"** to **"xAutomatic_Switch4"** signals the automatic mode switch position.

The outputs **"xClose_Switch1"** to **"xClose_Switch4"** indicate the status of the respective closed valve; the outputs **"xOpen_Switch1"** to **"xOpen_Switch4"** indicate the status of the respective opened valve.

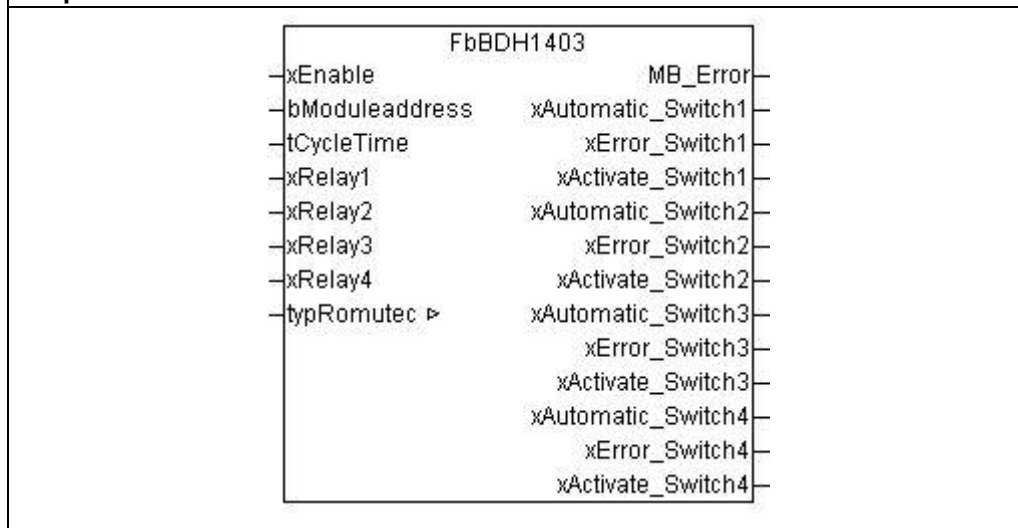
The **"typRomutec"** variable contains the data structure of the MP-bus telegram and must be connected to the variables with the same name on the **"FbRomutecMaster"** function block.

1.8. BDH1403 Digital Input Card 4 x 1DO/4DI+4DI(Inv)

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH1403	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xRelay1	BOOL	Actuation relay 1
xRelay2	BOOL	Actuation relay 2
xRelay3	BOOL	Actuation relay 3
xRelay4	BOOL	Actuation relay 4
Input/Output Parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	EnumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
xAutomatic_Switch1	BOOL	Automatic mode switch 1
xError1	BOOL	Error message device 1
xActivate1	BOOL	Operating condition device 1

xAutomatic_Switch2	BOOL	Automatic mode switch 2
xError_Switch2	BOOL	Error message device 2
xActivate_Switch2	BOOL	Operating condition device 2
xAutomatic_Switch3	BOOL	Automatic mode switch 3
xError_Switch3	BOOL	Error message device 3
xActivate_Switch3	BOOL	Operating condition device 3
xAutomatic_Switch4	BOOL	Automatic mode switch 4
xError_Switch4	BOOL	Error message device 4
xActivate_Switch4	BOOL	Operating condition device 4

Graphical Illustration:



Function Description:

The function block **"FbBDH1403"** is used to actuate the motor control card BDH1403. The LEDs are actuated with + 24 VDC, which is switched via the bus power supply on the card.

The module addressed through **"bModuleaddress"** is cyclically polled if the input **"xEnable"** is TRUE. The **"tCycleTime"** input parameter determines the cycle time.

In automatic mode, the relays can be actuated via inputs **"xRelay1"** to **"xRelay4"**.


To identify an error, the current error code is displayed at the output **"MB_Error"**. The enumeration **"MB_Error"** is in Modb_i05.lib.

A TRUE at the outputs **"xAutomatic_Switch1"** to **"xAutomatic_Switch4"** signals the automatic mode switch position.

The outputs **"xError_Switch1"** to **"xError_Switch4"** indicate the status of the respective error message; the outputs **"xActivate_Switch1"** to **"xActivate_Switch4"** indicate the status of the respective operating light.

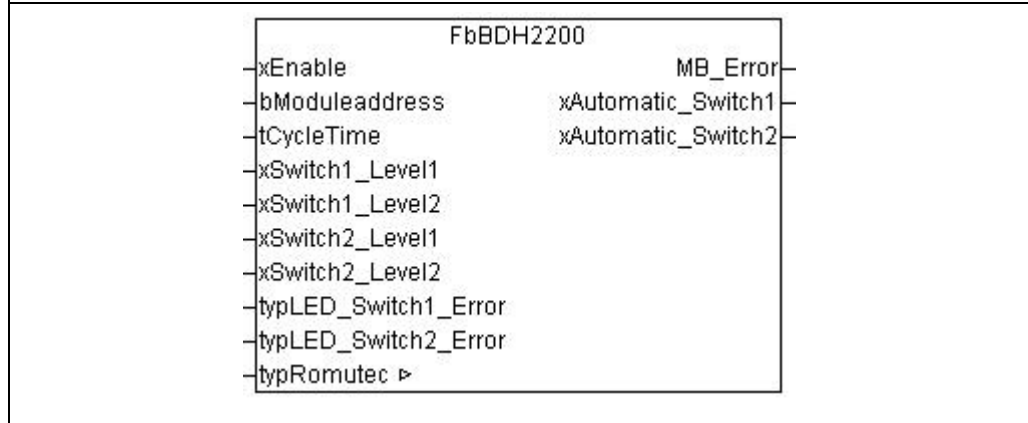
The **"typRomutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster"** function block.

1.9. BDH2200 Digital Output Card 2 x 2DO

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH2200	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xSwitch1_Level1	BOOL	Switch command relay switch 1 / level 1
xSwitch1_Level2	BOOL	Switch command relay switch 1 / level 2
xSwitch2_Level1	BOOL	Switch command relay switch 2 / level 1
xSwitch2_Level2	BOOL	Switch command relay switch 2 / level 2
typLED_Switch1_Error	typLED	Control for error message switch 1
	.LED_Green .LED_Red Blink	
typLED_Switch2_Error	typLED	Control for error message switch 2
Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams

Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
xAutomatic_Switch1	BOOL	Automatic mode switch 1
xAutomatic_Switch2	BOOL	Automatic mode switch 2

Graphical Illustration:



Function Description:

The function block “**FbBDH2200**” is used to actuate the motor control card BDH2200, whereby the LEDs are actuated by the function block.

The module addressed through “**bModuleaddress**” is cyclically polled if the input “**xEnable**” is TRUE. The “**tCycleTime**” input parameter determines the cycle time.

In automatic mode, the relays can be actuated for the respective switching level via inputs “**xSwitch1_Level1**” to “**xSwitch2_Level2**”.


The inputs “**typLED_Switch1_Error**” and “**typLED_Switch2_Error**” control the respective error messages. The LED color is specified via the structure “**typLED**”.

To identify an error, the current error code is displayed at the output “**MB_Error**”. The enumeration “**MB_Error**” is in Modb_i05.lib.

A TRUE at the outputs “**xAutomatic_Switch1**” and “**xAutomatic_Switch2**” signals the respective automatic modes.

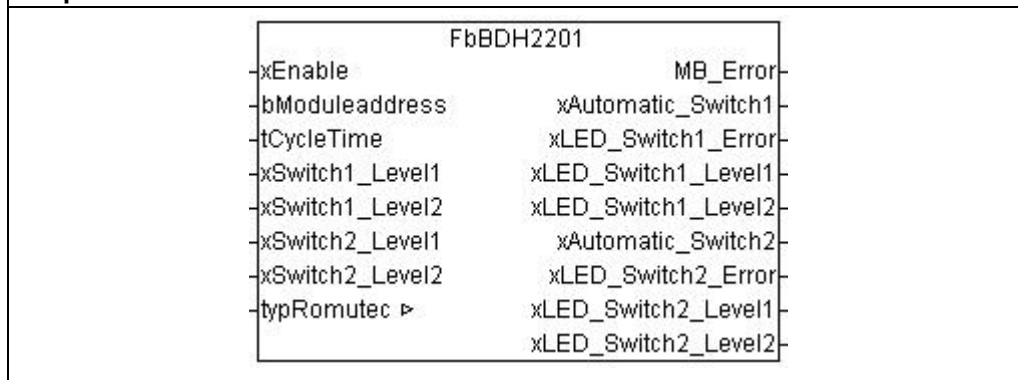
The “**typRomutec**” variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the “**FbRomutecMaster**” function block.

1.10. BDH2201 Digital Input Card 2 x 2DO/6DI

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH2201	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xSwitch1_Level1	BOOL	Switch command relay switch 1 / level 1
xSwitch1_Level2	BOOL	Switch command relay switch 1 / level 2
xSwitch2_Level1	BOOL	Switch command relay switch 2 / level 1
xSwitch2_Level2	BOOL	Switch command relay switch 2 / level 2
Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)

xAutomatic_Switch1	BOOL	Automatic mode switch 1
xLED_Switch1_Error	BOOL	Error message switch 1
xLED_Switch1_Level1	BOOL	Operating condition switch 1 level 1
xLED_Switch1_Level2	BOOL	Operating condition switch 1 level 2
xAutomatic_Switch2	BOOL	Automatic mode switch 2
typLED_Switch2_Error	typLED	Error message switch 2
xLED_Switch2_Level1	BOOL	Operating condition switch 2 level 1
xLED_Switch2_Level2	BOOL	Operating condition switch 2 level 2

Graphical Illustration:



Function Description:

The function block **“FbBDH2201”** is used to actuate the motor control card BDH2201. The LEDs are actuated with + 24 VDC, which is switched via the bus power supply on the card.

The module addressed through **“bModuleaddress”** is cyclically polled if the input **“xEnable”** is TRUE. The **“tCycleTime”** input parameter determines the cycle time.

In automatic mode, the relays can be actuated for the respective switching level via inputs **“xSwitch1_Level1”** to **“xSwitch2_Level2”**.

To identify an error, the current error code is displayed at the output **“MB_Error”**. The enumeration **“MB_Error”** is in Modb_i05.lib.


A TRUE at the outputs **“xAutomatic_Switch1”** and **“xAutomatic_Switch2”** signals the automatic mode switch position.

The outputs **“typLED_Switch1_Error”** and **“typLED_Switch2_Error”** indicate the status of the respective error messages.

The outputs **“xLED_Switch1_Level1”** and **“xLED_Switch1_Level2”**, along with **“xLED_Switch2_Level1”** and **“xLED_Switch2_Level2”**, indicate the status of the LEDs for the operation.

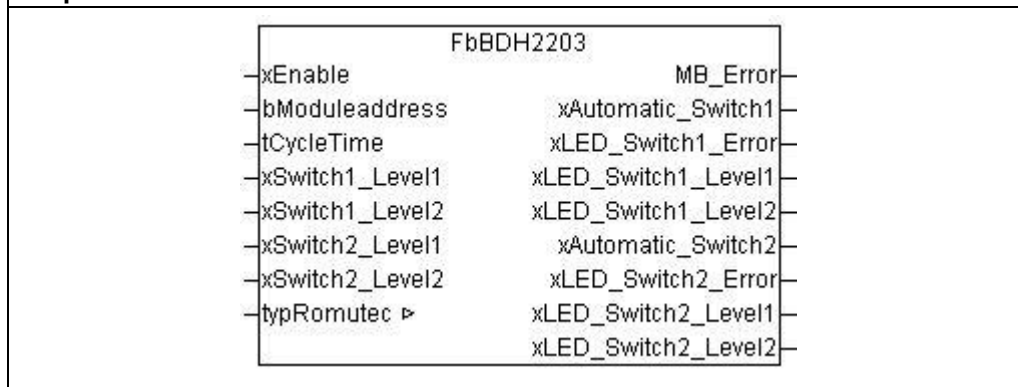
The **“typRomutec”** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **“FbRomutecMaster”** function block.

1.11. BDH2203 Digital Input Card 2 x 2DO/4DI+2DI(Inv)

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH2203	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xSwitch1_Level1	BOOL	Switch command relay switch 1 / level 1
xSwitch1_Level2	BOOL	Switch command relay switch 1 / level 2
xSwitch2_Level1	BOOL	Switch command relay switch 2 / level 1
xSwitch2_Level2	BOOL	Switch command relay switch 2 / level 2
Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)

xAutomatic_Switch1	BOOL	Automatic mode switch 1
xLED_Switch1_Error	BOOL	Error message switch 1
xLED_Switch1_Level1	BOOL	Operating condition switch 1 level 1
xLED_Switch1_Level2	BOOL	Operating condition switch 1 level 2
xAutomatic_Switch2	BOOL	Automatic mode switch 2
typLED_Switch2_Error	typLED	Error message switch 2
xLED_Switch2_Level1	BOOL	Operating condition switch 2 level 1
xLED_Switch2_Level2	BOOL	Operating condition switch 2 level 2

Graphical Illustration:



Function Description:

The function block **“FbBDH2203”** is used to actuate the motor control card BDH2203. The LEDs are actuated with + 24 VDC, which is switched via the bus power supply on the card.

The module addressed through **“bModuleaddress”** is cyclically polled if the input **“xEnable”** is TRUE. The **“tCycleTime”** input parameter determines the cycle time.

In automatic mode, the relays can be actuated for the respective switching level via inputs **“xSwitch1_Level1”** to **“xSwitch2_Level2”**.

To identify an error, the current error code is displayed at the output **“MB_Error”**. The enumeration **“MB_Error”** is in Modb_i05.lib.


A TRUE at the outputs **“xAutomatic_Switch1”** and **“xAutomatic_Switch2”** signals the automatic mode switch position.

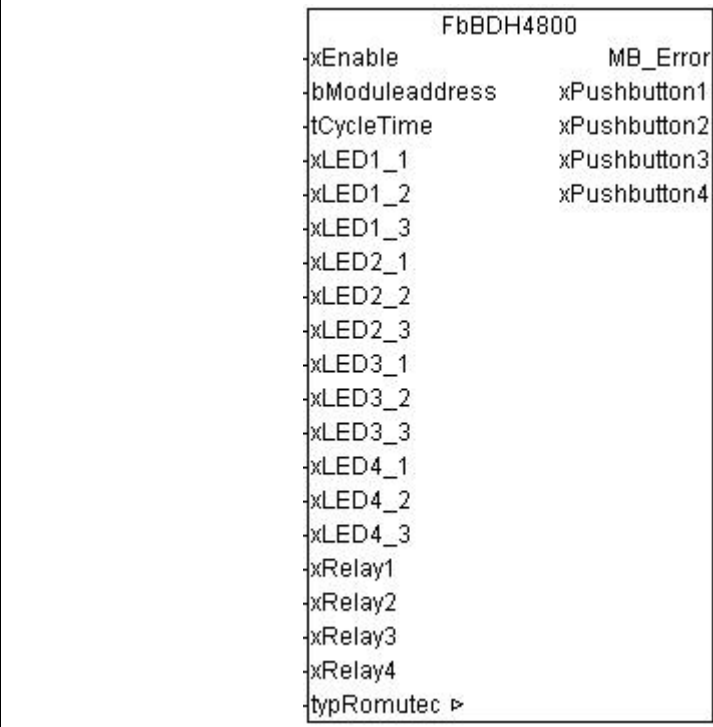
The outputs **“typLED_Switch1_Error”** and **“typLED_Switch2_Error”** indicate the status of the respective error messages.

The outputs **“xLED_Switch1_Level1”** and **“xLED_Switch1_Level2”**, along with **“xLED_Switch2_Level1”** and **“xLED_Switch2_Level2”**, indicate the status of the LEDs for the operation.

The **“typRomutec”** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **“FbRomutecMaster”** function block.

1.12. BDH4800 Digital Output Card 4 x DI/16 x DO

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH4800	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomotecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xLED1_1	BOOL	Actuation LED 1 push-button 1
xLED1_2	BOOL	Actuation LED 2 push-button 1
xLED1_3	BOOL	Actuation LED 3 push-button 1
xLED2_1	BOOL	Actuation LED 1 push-button 2
xLED2_2	BOOL	Actuation LED 2 push-button 2
xLED2_3	BOOL	Actuation LED 3 push-button 2
xLED3_1	BOOL	Actuation LED 1 push-button 3
xLED3_2	BOOL	Actuation LED 2 push-button 3
xLED3_3	BOOL	Actuation LED 3 push-button 3
xLED4_1	BOOL	Actuation LED 1 push-button 4
xLED4_2	BOOL	Actuation LED 2 push-button 4
xLED4_3	BOOL	Actuation LED 3 push-button 4
xRelay1	BOOL	Actuation coupler relay 1
xRelay2	BOOL	Actuation coupler relay 2
xRelay3	BOOL	Actuation coupler relay 3
xRelay4	BOOL	Actuation coupler relay 4

Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
xPushbutton1	BOOL	Feedback push-button 1
xPushbutton2	BOOL	Feedback push-button 2
xPushbutton3	BOOL	Feedback push-button 3
xPushbutton4	BOOL	Feedback push-button 4
Graphical Illustration:		
		
Function Description:		
<p>The function block “FbBDH4800” is used to actuate the illuminated push-button card BDH4800.</p> <p>The module addressed though “bModuleaddress” is cyclically polled if the input “xEnable” is TRUE. The “tCycleTime” input parameter determines the cycle time.</p> <p>The LEDs on the module are actuated via inputs “xLED1_1” to “xLED4_3”. Actuating LED1 and LED2 of a group does not cause a collective fault. However, if LED3 is actuated, there is also a collective fault on the central module.</p>		

The coupling relays can be actuated via inputs ***“xRelay1”*** to ***“xRelay4”***.


To identify an error, the current error code is displayed at the output ***“MB_Error”***.
The enumeration ***“MB_Error”*** is in Modb_i05.lib.

A TRUE at the outputs ***“xPushbutton1”*** to ***“xPushbutton4”*** signals the actuation of the respective push-button on the module.

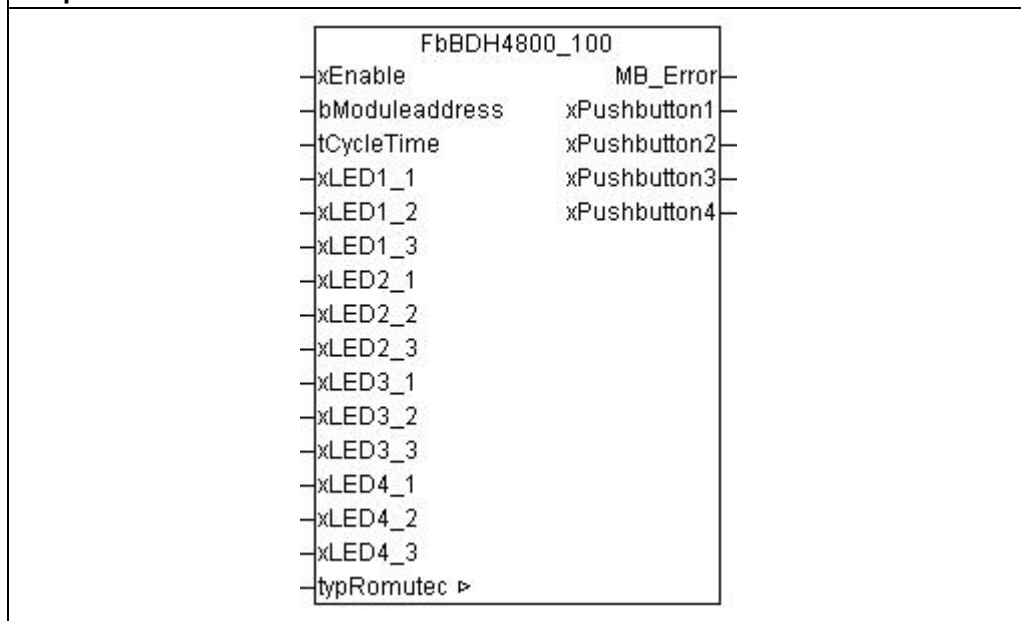
The ***“typRomutec”*** variable contains the data structure of the MP-bus telegram and must be connected to the variables with the same name on the ***“FbRomutecMaster”*** function block.

Note: The push-button polling is dependent on parameter ***“tCycleTime”***. Now, if the push-button is pressed only during the time between two polling processes, the push-button press might not be detected.

1.13. BDH4800-100 Digital Output Card 4 x DI/12 x DO

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBDH4800_100	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
xLED1_1	BOOL	Actuation LED 1 push-button 1
xLED1_2	BOOL	Actuation LED 2 push-button 1
xLED1_3	BOOL	Actuation LED 3 push-button 1
xLED2_1	BOOL	Actuation LED 1 push-button 2
xLED2_2	BOOL	Actuation LED 2 push-button 2
xLED2_3	BOOL	Actuation LED 3 push-button 2
xLED3_1	BOOL	Actuation LED 1 push-button 3
xLED3_2	BOOL	Actuation LED 2 push-button 3
xLED3_3	BOOL	Actuation LED 3 push-button 3
xLED4_1	BOOL	Actuation LED 1 push-button 4
xLED4_2	BOOL	Actuation LED 2 push-button 4
xLED4_3	BOOL	Actuation LED 3 push-button 4
Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams

Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)
xPushbutton1	BOOL	Feedback push-button 1
xPushbutton2	BOOL	Feedback push-button 2
xPushbutton3	BOOL	Feedback push-button 3
xPushbutton4	BOOL	Feedback push-button 4

Graphical Illustration:**Function Description:**

The function block **"FbBDH4800_100"** is used to actuate the illuminated push-button card BDH4800_100.

The module addressed through **"bModuleaddress"** is cyclically polled if the input **"xEnable"** is TRUE. The **"tCycleTime"** input parameter determines the cycle time.

The LEDs on the module are actuated via inputs **"xLED1_1"** to **"xLED4_3"**. Actuating LED1 and LED2 of a group does not cause a collective fault. However, if LED3 is actuated, there is also a collective fault on the central module.

To identify an error, the current error code is displayed at the output **"MB_Error"**. The enumeration **"MB_Error"** is in Modb_i05.lib.


A TRUE at the outputs **"xPushbutton1"** to **"xPushbutton4"** signals the actuation of the respective push-button on the module.

The **"typRomutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster"** function block.

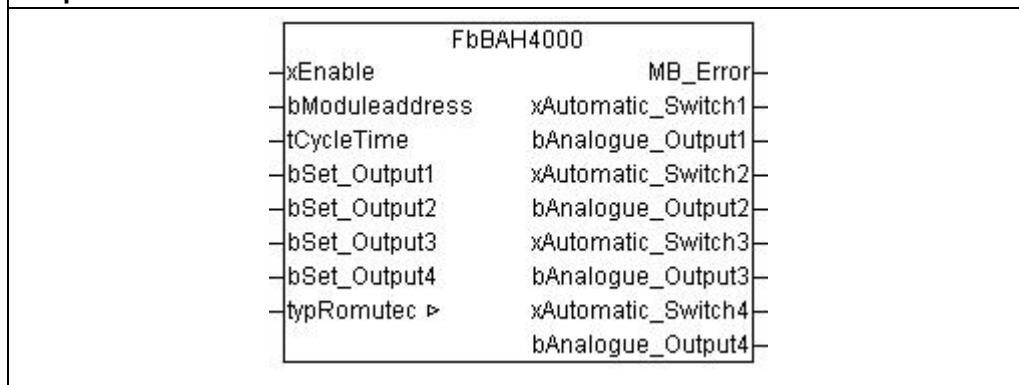
Note: The push-button polling is dependent on parameter **"tCycleTime"**. Now, if the push-button is pressed only during the time between two polling processes, the push-button press might not be detected.

1.14. BAH4000 Analog Output Card 4 x AO

WAGO-I/O-PRO CAA Library Elements	
Category:	Building technology

WAGO-I/O-PRO CAA Library Elements		
Name:	FbBAH4000	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
bSet_Output1	BYTE	Output voltage specification switch 1 Value range: 0 ... 100 %
bSet_Output2	BYTE	Output voltage specification switch 2 Value range: 0 ... 100 %
bSet_Output3	BYTE	Output voltage specification switch 3 Value range: 0 ... 100 %
bSet_Output4	BYTE	Output voltage specification switch 4 Value range: 0 ... 100 %
Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)

xAutomatic_Switch1	BOOL	Automatic mode switch 1
bAnalogue_Output1	BYTE	Voltage at output 1 (0 ... 10 V) Value range: 0 ... 100 %
xAutomatic_Switch2	BOOL	Automatic mode switch 2
bAnalogue_Output2	BYTE	Voltage at output 2 (0 ... 10 V) Value range: 0 ... 100 %
xAutomatic_Switch3	BOOL	Automatic mode switch 3
bAnalogue_Output3	BYTE	Voltage at output 3 (0 ... 10 V) Value range: 0 ... 100 %
xAutomatic_Switch4	BOOL	Automatic mode switch 4
bAnalogue_Output4	BYTE	Voltage at output 4 (0 ... 10 V) Value range: 0 ... 100 %

Graphical Illustration:**Function Description:**

The function block **"FbBDH4000"** is used to actuate the analog encoder card BDH4000. The analog setpoint is converted to a voltage from 0 ... 10 V.

The module addressed though **"bModuleaddress"** is cyclically polled if the input **"xEnable"** is TRUE. The **"tCycleTime"** input parameter determines the cycle time.

In automatic mode, the setpoint of outputs **"bSet_Output1"** to **"bSet_Output4"** is converted to a voltage from 0 ... 10 V. The set voltage is optically indicated by the LED brightness.


To identify an error, the current error code is displayed at the output **"MB_Error"**. The enumeration **"MB_Error"** is in Modb_i05.lib.

A TRUE at the outputs **"xAutomatic_Switch1"** to **"xAutomatic_Switch4"** signals the respective automatic mode switch position on the module.

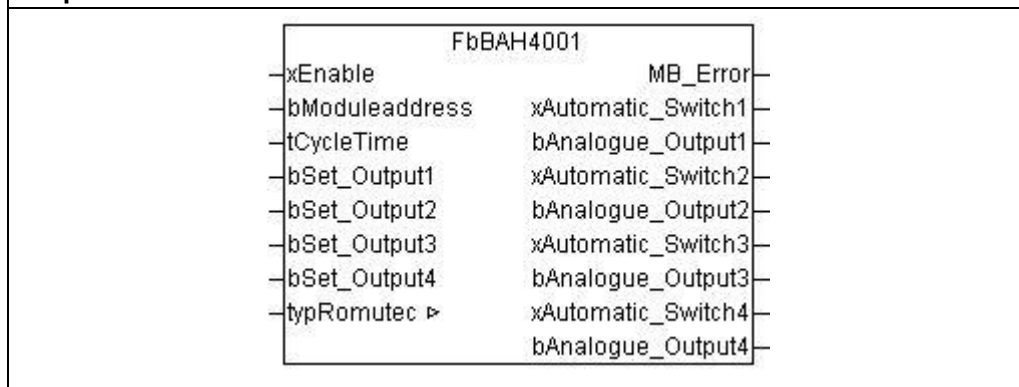
The current output voltage values are displayed at the outputs **"bAnalogue_Output1"** to **"bAnalogue_Output4"** in both automatic and manual modes.

The **"typRomutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster"** function block.

1.15. BAH4001 Analog Card 4 x AO+4 x AI

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbBAH4001	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModuleaddress	BYTE	Module address value range 0 ... 7
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 min Default: t#1s
bSet_Output1	BYTE	Output voltage specification switch 1 Value range: 0 ... 100 %
bSet_Output2	BYTE	Output voltage specification switch 2 Value range: 0 ... 100 %
bSet_Output3	BYTE	Output voltage specification switch 3 Value range: 0 ... 100 %
bSet_Output4	BYTE	Output voltage specification switch 4 Value range: 0 ... 100 %
Input/Output parameters:	Data Type:	Comment:
typRomutec	typRomutec	Data exchange with the FbRomutecMaster function block via command and response telegrams
Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster description)

xAutomatic_Switch1	BOOL	Automatic mode switch 1
bAnalogue_Output1	BYTE	Voltage at output 1 (0 ... 10 V) Value range: 0 ... 100 %
xAutomatic_Switch2	BOOL	Automatic mode switch 2
bAnalogue_Output2	BYTE	Voltage at output 2 (0 ... 10 V) Value range: 0 ... 100 %
xAutomatic_Switch3	BOOL	Automatic mode switch 3
bAnalogue_Output3	BYTE	Voltage at output 3 (0 ... 10 V) Value range: 0 ... 100 %
xAutomatic_Switch4	BOOL	Automatic mode switch 4
bAnalogue_Output4	BYTE	Voltage at output 4 (0 ... 10 V) Value range: 0 ... 100 %

Graphical Illustration:**Function Description:**

The function block **"FbBDH4001"** is used to actuate the analog encoder card BDH4001. The analog setpoint is converted to a voltage from 0 ... 10 V.

The module addressed though **"bModuleaddress"** is cyclically polled if the input **"xEnable"** is TRUE. The **"tCycleTime"** input parameter determines the cycle time.

In automatic mode, the setpoint of outputs **"bSet_Output1"** to **"bSet_Output4"** is converted to a voltage from 0 ... 10 V. The set voltage is optically indicated by the LED brightness.

To identify an error, the current error code is displayed at the output **"MB_Error"**. The enumeration **"MB_Error"** is in Modb_i05.lib.

A TRUE at the outputs **"xAutomatic_Switch1"** to **"xAutomatic_Switch4"** signals the respective automatic mode switch position on the module.

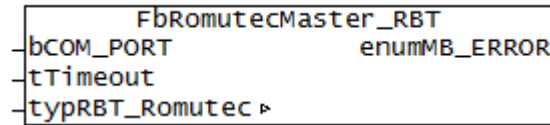
The current output voltage values are displayed at the outputs **"bAnalogue_Output1"** to **"bAnalogue_Output4"** in both automatic and manual modes.

The **"typRomutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster"** function block.

2. Robutec

2.1. FbRomotecMaster

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbRomotecMaster	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomotecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Libraries Used:	SerComm.lib Serial_Interface_01.lib. mod_com.lib Modb_i05.lib	
Input Parameters:	Data Type:	Comment:
bCOM_PORT	BYTE	No. of the serial interface used 1 -> Internal service interface 2 -> 1st connected serial interface 3 -> 2nd connected serial interface
tTimeOut	TIME	Timeout for communication Value range 500 ms ... 10 min Default = t#500ms
Input/Output Parameters:	Data Type:	Comment:
typRBT_Romotec	typRBT_Romotec	Data exchange with the following function blocks via command and response telegrams
.cbCOM_BAUDRATE	COM_BAUDRATE	Baud rate: BAUD_9600: = 960 BAUD_19200: = 1920 BAUD_38400: = 3840 BAUD_57600 := 5760, Default = BAUD_9600
Return Value:	Data Type:	Comment:
MB_Error	enumMB_ERROR	Indication of communication errors 16#00: = MB_NO_ERROR 16#01: = MB_NOT_SUPPORTED_FUNCTION 16#03: = MB_ILLEGAL_DATA 16#90: = MB_EXTENDED_SLAVE_ERROR 16#96: = MB_CRC_ERROR 16#97: = MB_ILLEGAL_NUMBER_OF_POINTS 16#98: = MB_OVERRUN 16#99: = MB_TIME_OUT

Graphical Illustration:**Function Description:**

The function block **"FbRomutecMaster_RBT"** can be used to connect the Robutec door station to the WAGO-I/O-SYSTEM. The MODBUS RS485 RTU communication is implemented via the serial module 750-652, not via 750-650/003-000 or 750-653/003-000.

The Romutec Master RBT handles communication with the MODBUS RTU Robutec door station. The **"typRBT_Romutec"** variable facilitates the connection with other RBT function blocks.

The number of the serial interface used is set by **"bCOM_PORT"**.

Example:


- 1 -> Internal service interface
- 2 -> 1st connected serial interface
- 3 -> 2nd connected serial interface

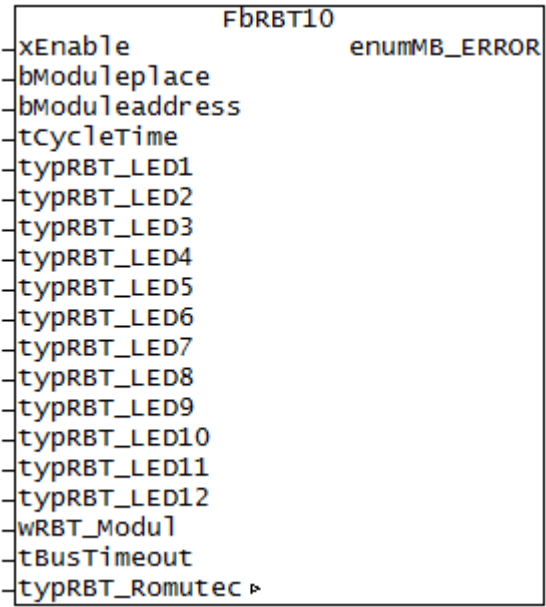
The baud rate can be set in the structure **"typRBT_Romutec.cbCOM_BAUDRATE"**. The new baud rate is transferred from the door station when the Robutec module is restarted.

If the waiting time for a response telegram **"tTimeOut"** is exceeded, an error message is issued.


To identify an error, the current error code is displayed at the output **"MB_Error"**. The **"enumMB_Error"** enumeration is in the Modb_I05.lib.

2.2. RBT10 Signaling Module – 12 x LED

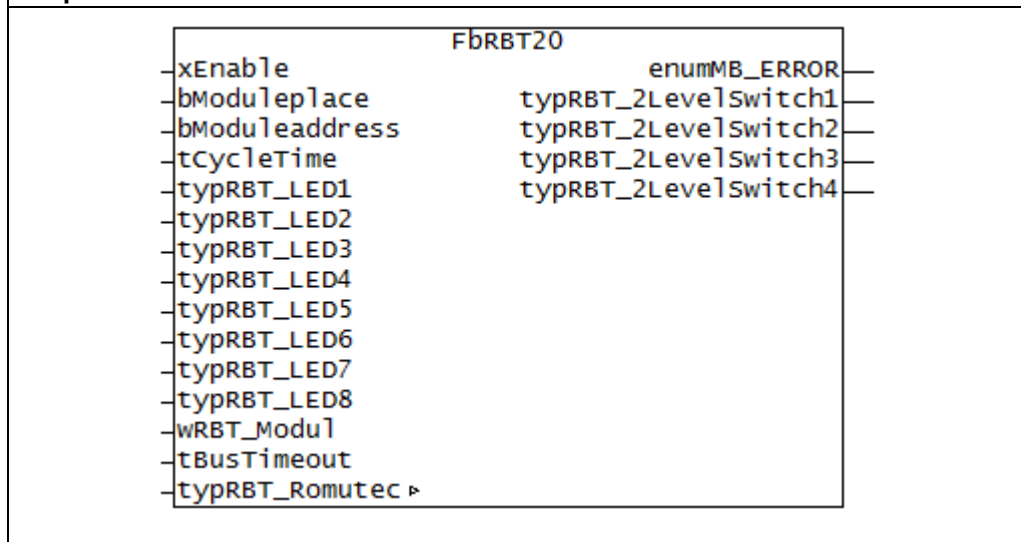
WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbRBT10	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModulplace	BYTE	Module position value range 1 ... 17
bModuladdress	BYTE	Module address value range 0 ... 254
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 s Default: t#1s + cycle time
typRBT_LED1...12	typRBT_LED	Control for LEDs 1 ... 12
.LED_Red .LED_Green	BOOL	Structure of LED actuation
wRBT_Modul	WORD	Module commands: Watchdog reset (incl. all masks) = 1 Lamp test short = 10 Lamp test long = 11 Reset all masks = 20 Reset all EEPROM values = 255 Commands 20 + 255 = 275 Commands 20 + 255+1 = 306
tBusTimeout	TIME	RBT module bus timeout Default: 60 => 60 s
Input/Output Parameters:	Data Type:	Comment:
typRBT_Romutec	typRBT_Romutec	Data exchange with the FbRomutecMaster_RBT function block via command and response telegrams
Return Value:	Data Type:	Comment:

WAGO-I/O-PRO CAA Library Elements		
enumMB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster_RBT description)
Graphical Illustration:		
 <pre> graph LR subgraph FbRBT10 xEnable bModuleplace bModuleaddress tCycleTime typRBT_LED1 typRBT_LED2 typRBT_LED3 typRBT_LED4 typRBT_LED5 typRBT_LED6 typRBT_LED7 typRBT_LED8 typRBT_LED9 typRBT_LED10 typRBT_LED11 typRBT_LED12 wRBT_Modul tBusTimeout typRBT_Romutec end FbRBT10 --> enumMB_ERROR </pre>		
Function Description: <p>The connection between the Romutec manual mode level RBT10 and the WAGO-I/O-SYSTEM is realized with the function block "FbRBT10". Each LED has four different status displays (LED off, LED green, LED orange, LED red).</p> <p>If the input "xEnable" is TRUE, the module is cyclically polled. The "tCycleTime" input parameter determines the cycle time.</p> <p>The position must be entered at the input "bModulplace" and the address (see back of RBT module) must be entered at the input "bModuladdress".</p> <p>The LEDs on the module are actuated via inputs "typRBT_LED1" to "typRBT_LED12". The LED color is specified via the structure "typRBT_LED". Here, it is possible to actuate the variables "LED_Red" and "LED_Green" at the same time (LED orange).</p> <p>Different commands can be sent to the RBT module via "wRBT_Modul"; see input parameters.</p> <p>The "tBusTimeout" for the RBT module is set as a decimal in seconds; if no valid telegram is received from the RBT module within this time, the "Status" LED starts blinking red.</p> <p>To identify an error, the current error code is displayed at the output "MB_Error". The "enumMB_Error" enumeration is in the Modb_I05.lib.</p> <p>The "typRBT_Romutec" variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the "FbRomutecMaster_RBT" function block.</p>		

2.3. RBT20 Operating Module – 8 x LED, 4 x Switches

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbRBT20	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModulplace	BYTE	Module position value range 1 ... 17
bModuladdress	BYTE	Module address value range 0 ... 254
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 s Default: t#1s + cycle time
typRBT_LED1...8	typRBT_LED	Control for LEDs 1 ... 8
.LED_Red .LED_Green	BOOL	Structure of LED actuation
wRBT_Modul	WORD	Module commands: Watchdog reset (incl. all masks) = 1 Lamp test short = 10 Lamp test long = 11 Reset all masks = 20 Reset all EEPROM values = 255 Commands 20 + 255 = 275 Commands 20 + 255+1 = 306
tBusTimeout	TIME	RBT module bus timeout Default: 60 => 60 s
Input/Output Parameters:	Data Type:	Comment:
typRBT_Romutec	typRBT_Romutec	Data exchange with the FbRomutecMaster_RBT function block via command and response telegrams

Return Value:	Data Type:	Comment:
enumMB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster_RBT description)
typRBT_2LevelSwitch1	typRBT_2LevelSwitch	Rotary switch 1
.xState1 .xState2 .xState3 .xState4	BOOL	Structure of rotary switch with readout of current switch position
typRBT_2LevelSwitch2	typRBT_2LevelSwitch	Rotary switch 2
typRBT_2LevelSwitch3	typRBT_2LevelSwitch	Rotary switch 3
typRBT_2LevelSwitch4	typRBT_2LevelSwitch	Rotary switch 4

Graphical Illustration:

Function Description:

The connection between the Romutec manual mode level RBT20 and the WAGO-I/O-SYSTEM is realized with the function block **"FbRBT20"**. Each LED has four different status displays (LED off, LED green, LED orange, LED red).

If the input **"xEnable"** is TRUE, the module is cyclically polled. The **"tCycleTime"** input parameter determines the cycle time.

The position must be entered at the input **"bModulplace"** and the address (see back of RBT module) must be entered at the input **"bModuladdress"**.

The LEDs on the module are actuated via inputs **"typRBT_LED1"** to **"typRBT_LED8"**. The LED color is specified via the structure **"typRBT_LED"**. Here, it is possible to actuate the variables **"LED_Red"** and **"LED_Green"** at the same time (LED orange).

Different commands can be sent to the RBT module via **"wRBT_Modul"**; see input parameters.


The **"tBusTimeout"** for the RBT module is set as a decimal in seconds; if no valid telegram is received from the RBT module within this time, the "Status" LED starts blinking red.

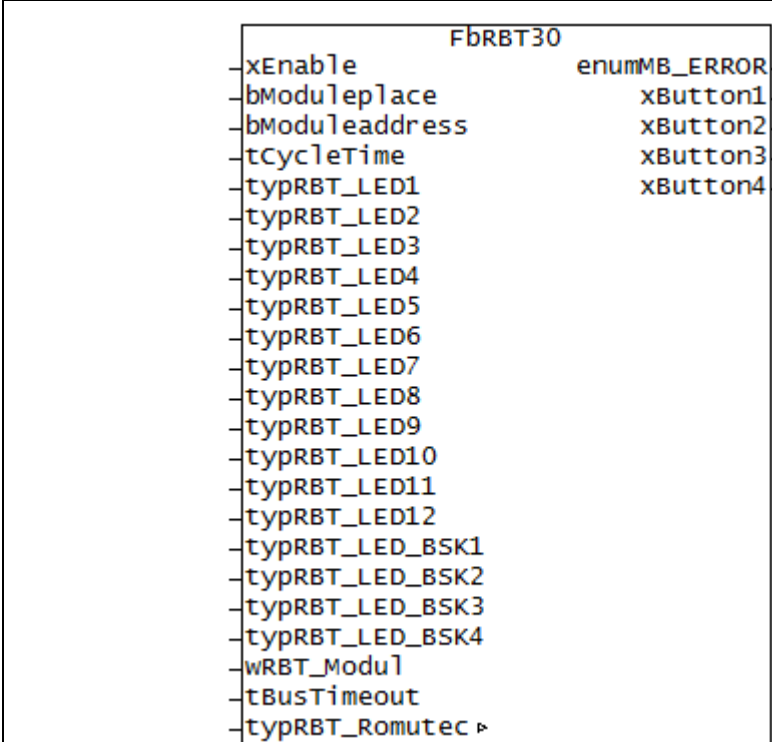
A TRUE in the output structure variables **"typRBT_2LevelSwitch1"** to **"typRBT_2LevelSwitch4"** signals the switch position of the respective rotary switch.

To identify an error, the current error code is displayed at the output **"MB_Error"**. The **"enumMB_Error"** enumeration is in the Modb_I05.lib.

The **"typRBT_Romutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster_RBT"** function block.

2.4. RBT30 Operating Module – 12 x LED, 4 x LED and 4 x Switches

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbRBT30	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomotecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModulplace	BYTE	Module position value range 1 ... 17
bModuladdress	BYTE	Module address value range 0 ... 254
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 s Default: t#1s + cycle time
typRBT_LED1...12	typRBT_LED	Control for LEDs 1 ... 12
.LED_Red .LED_Green	BOOL	Structure of LED actuation
typRBT_LED_BSK1...4	typRBT_LED	Control for push-button LEDs 1 ... 4
.LED_Red .LED_Green	BOOL	Structure of LED actuation
wRBT_Modul	WORD	Module commands: Watchdog reset (incl. all masks) = 1 Lamp test short = 10 Lamp test long = 11 Reset all masks = 20 Reset all EEPROM values = 255 Commands 20 + 255 = 275 Commands 20 + 255+1 = 306
tBusTimeout	TIME	RBT module bus timeout Default: 60 => 60 s

Input/Output parameters:	Data Type:	Comment:
typRBT_Romutec	typRBT_Romutec	For data exchange with the FbRomutecMaster_RBT function block via command and response telegrams
Return Value:	Data Type:	Comment:
enumMB_Error	EnumMB_ERROR	Indication of communication errors (see FbRomutecMaster_RBT description)
xButton1	BOOL	Feedback push-button 1
xButton2	BOOL	Feedback push-button 2
xButton3	BOOL	Feedback push-button 3
xButton4	BOOL	Feedback push-button 4
Graphical Illustration:		
		

Function Description:

The connection between the Romutec manual mode level RBT30 and the WAGO-I/O-SYSTEM is realized with the function block **"FbRBT30"**. Each LED has four different status displays (LED off, LED green, LED orange, LED red).

If the input **"xEnable"** is TRUE, the module is cyclically polled. The **"tCycleTime"** input parameter determines the cycle time.

The position must be entered at the input **"bModulplace"** and the address (see back of RBT module) must be entered at the input **"bModuladdress"**.

The LEDs on the module are actuated via inputs **"typRBT_LED1"** to **"typRBT_LED12"**. The LED color is specified via the structure **"typRBT_LED"**. Here, it is possible to actuate the variables **"LED_Red"** and **"LED_Green"** at the same time (LED orange).

Different commands can be sent to the RBT module via **"wRBT_Modul"**; see input parameters.


The **"tBusTimeout"** for the RBT module is set as a decimal in seconds; if no valid telegram is received from the RBT module within this time, the "Status" LED starts blinking red.

A TRUE at the output variables **"xButton1"** to **"xButton4"** signals the actuation of the respective push-button.

To identify an error, the current error code is displayed at the output **"MB_Error"**. The **"enumMB_Error"** enumeration is in the Modb_I05.lib.

The **"typRBT_Romutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster_RBT"** function block.

2.5. RBT40 Analog Module – 4 x Rotary Encoder

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbRBT40	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomutecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModulplace	BYTE	Module position value range 1 ... 17
bModuladdress	BYTE	Module address value range 0 ... 254
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 s Default: t#1s + cycle time
rAutomaticValueChannel1	REAL	Automatic value 1
rAutomaticValueChannel2	REAL	Automatic value 2
rAutomaticValueChannel3	REAL	Automatic value 3
rAutomaticValueChannel4	REAL	Automatic value 4
typConfigRBT40	typConfig RBT40	Configuration parameters
bIncrementalFactor1	BYTE	Incremental factor for rotary encoder 1 Default: 5
bIncrementalFactor2	BYTE	Incremental factor for rotary encoder 2 Default: 5
bIncrementalFactor3	BYTE	Incremental factor for rotary encoder 3 Default: 5
bIncrementalFactor4	BYTE	Incremental factor for rotary encoder 4 Default: 5
wBrightnessLED	WORD	Brightness of bar display in % Default: 100

WAGO-I/O-PRO CAA Library Elements		
wRBT_Modul	WORD	Module commands: Watchdog reset (incl. all masks) = 1 Lamp test short = 10 Lamp test long = 11 Reset all masks = 20 Reset all EEPROM values = 255 Commands 20 + 255 = 275 Commands 20 + 255+1 = 306
tBusTimeout	TIME	RBT module bus timeout Default: 60 => 60 s
Input/Output parameters:	Data Type:	Comment:
typRBT_Romutec	typRBT_Romutec	For data exchange with the FbRomutecMaster_RBT function block via command and response telegrams
Return Value:	Data Type:	Comment:
enumMB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster_RBT description)
xManualOverrideChannel1	BOOL	Manual override 1
rActualValueChannel1	REAL	Current value 1
xManualOverrideChannel2	BOOL	Manual override 2
rActualValueChannel2	REAL	Current value 2
xManualOverrideChannel3	BOOL	Manual override 3
rActualValueChannel3	REAL	Current value 3
xManualOverrideChannel4	BOOL	Manual override 4
rActualValueChannel4	BYTE	Current value 4
Graphical Illustration:		

Function Description:

The connection between the Romutec manual mode level RBT40 and the WAGO-I/O-SYSTEM is realized with the function block **"FbRBT40"**.

If the input **"xEnable"** is TRUE, the module is cyclically polled. The **"tCycleTime"** input parameter determines the cycle time.

The position must be entered at the input **"bModulplace"** and the address (see back of RBT module) must be entered at the input **"bModuladdress"**.

Which value the output **"bActualValueChannel"** should have when no **"xManualOverrideChannel"** manual override is active is specified via the input **"rAutomaticValueChannel"**.

During a **"xManualOverrideChannel"** manual override, the output **"rActualValueChannel"** is incrementally changed by the value at the input **"bIncrementalFactor"**.

The bar display brightness can be set between 0 and 100% with the input **"wBrightnessLED"**.


Different commands can be sent to the RBT module via **"wRBT_Modul"**; see input parameters.

The **"tBusTimeout"** for the RBT module is set as a decimal in seconds; if no valid telegram is received from the RBT module within this time, the "Status" LED starts blinking red.

To identify an error, the current error code is displayed at the output **"MB_Error"**. The **"enumMB_Error"** enumeration is in the Modb_I05.lib.

The **"typRBT_Romutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster_RBT"** function block.

2.6. RBT50 Operating Module – 2 x Analog and 2 x Digital

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbRBT50	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomotecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Illustration:		
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Starts cyclical polling of the connected module Default: TRUE
bModulplace	BYTE	Module position value range 1 ... 17
bModuladdress	BYTE	Module address value range 0 ... 254
tCycleTime	TIME	Time for cyclical module polling Value range 500 ms ... 10 s Default: t#1s + cycle time
rAutomaticValueChannel1	REAL	Automatic value 1
rAutomaticValueChannel2	REAL	Automatic value 2
typRBT_LED1...6	typRBT_LED	Control for LEDs 1 ... 6
.LED_Red .LED_Green	BOOL	Structure of LED actuation
typConfigRBT50	typConfigRBT50	Configuration parameters
bIncrementalFactor1	BYTE	Incremental factor for rotary encoder 1 Default: 5
bIncrementalFactor2	BYTE	Incremental factor for rotary encoder 2 Default: 5
wBrightnessLED	WORD	Brightness of bar display in % Default: 100

WAGO-I/O-PRO CAA Library Elements		
wRBT_Modul	WORD	Module commands: Watchdog reset (incl. all masks) = 1 Lamp test short = 10 Lamp test long = 11 Reset all masks = 20 Reset all EEPROM values = 255 Commands 20 + 255 = 275 Commands 20 + 255+1 = 306
tBusTimeout	TIME	RBT module bus timeout Default: 60 => 60 s
Input/Output parameters:	Data Type:	Comment:
typRBT_Romutec	typRBT_Romutec	For data exchange with the FbRomutecMaster_RBT function block via command and response telegrams
Return Value:	Data Type:	Comment:
enumMB_Error	enumMB_ERROR	Indication of communication errors (see FbRomutecMaster_RBT description)
xManualOverrideChannel1	BOOL	Manual override 1
rActualValueChannel1	REAL	Current value 1
xManualOverrideChannel2	BOOL	Manual override 2
rActualValueChannel2	REAL	Current value 2
typRBT_2LevelSwitch1	typRBT_2LevelSwitch	Rotary switch 1
.xState1 .xState2 .xState3 .xState4	BOOL	Structure of rotary switch with readout of current switch position
typRBT_2LevelSwitch2	typRBT_2LevelSwitch	Rotary switch 2
Graphical Illustration:		

Function Description:

The connection between the Romutec manual mode level RBT50 and the WAGO-I/O-SYSTEM is realized with the function block **"FbRBT50"**. Each LED has four different status displays (LED off, LED green, LED orange, LED red).

If the input **"xEnable"** is TRUE, the module is cyclically polled. The **"tCycleTime"** input parameter determines the cycle time.

The position must be entered at the input **"bModulplace"** and the address (see back of RBT module) must be entered at the input **"bModuladdress"**.

Which value the output **"rActualValueChannel"** should have when no **"xManualOverrideChannel"** manual override is active is specified via the input **"rAutomaticValueChannel"**.

During a **"xManualOverrideChannel"** manual override, the output **"rActualValueChannel"** is incrementally changed by the value at the input **"bIncrementalFactor"**.

The LEDs on the module are actuated via inputs **"typRBT_LED1"** to **"typRBT_LED6"**. The LED color is specified via the structure **"typRBT_LED"**. Here, it is possible to actuate the variables **"LED_Red"** and **"LED_Green"** at the same time (LED orange).

The bar display brightness can be set between 0 and 100% with the input **"wBrightnessLED"**.

Different commands can be sent to the RBT module via **"wRBT_Modul"**; see input parameters.

The **"tBusTimeout"** for the RBT module is set as a decimal in seconds; if no valid telegram is received from the RBT module within this time, the "Status" LED starts blinking red.

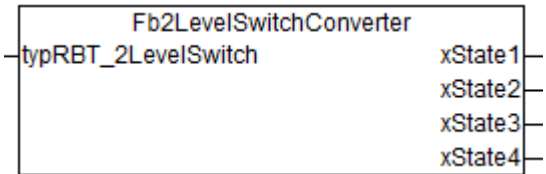
A TRUE in the output structure variables **"typRBT_2LevelSwitch1"** and **"typRBT_2LevelSwitch2"** signals the switch position of the respective rotary switch.

To identify an error, the current error code is displayed at the output **"MB_Error"**. The enumeration **"MB_Error"** is in Modb_i05.lib.

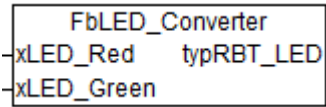
The **"typRBT_Romutec"** variable contains the data structure of the MODBUS telegram and must be connected to the variables with the same name on the **"FbRomutecMaster_RBT"** function block.

3. Utilities

3.1. Fb2LevelSwitchConverter

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	Fb2LevelSwitchConverter	
Type:	Function <input type="checkbox"/>	Functions block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomotecModbusRTU_04.lib	
Applicable to:	See Release Note.	
Input Parameters:	Data Type:	Comment:
typRBT_2LevelSwitch	typRBT_2LevelSwitch	2 level switch variable
Return Value:	Data Type:	Comment:
xState1	BOOL	Switch state 1
xState2	BOOL	Switch state 2
xState3	BOOL	Switch state 3
xState4	BOOL	Switch state 4
Function Description:		
		
Funktionsbeschreibung:		
<p>The function block „Fb2LevelSwitchConverter“ converts the 2 level switch variable to boolean variables.</p>		

3.2. FbLED_Converter

WAGO-I/O-PRO CAA Library Elements		
Category:	Building technology	
Name:	FbLED_Converter	
Type:	Function <input type="checkbox"/>	Functions block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	RomotecModbusRTU_04.lib	
Applicable to:	See Release-Note	
Input Parameters:	Data Type:	Comment:
xLED_Red	BOOL	LED Red
xLED_Green	BOOL	LED Green
Return Value:	Data Type:	Comment:
typRBT_LED	typRBT_LED	LED-structure variable
Graphical Illustration:		
		
Function Description:		
<p>The function block „FbLED_Converter“ converts the two colors into the LED structure variable.</p>		

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