WAGO-I/O-*PRO* CAA library

Stepper_03.lib

The Stepper_03.lib library provides function blocks which allow to configure the stepper modules 750-670, 750-671, 750-672 and 750-673 as well as to run a stepper motor.

Content

Stepper_03.lib

Commen

MC3_StepperCommunication

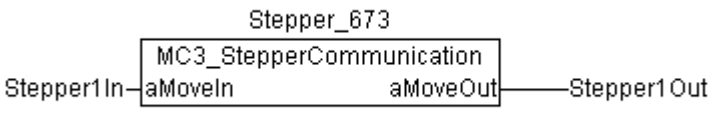
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_StepperCommunication		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
aMoveIn	Array[0..11] of BYTE	Input array of stepper module

Input/Output parameter:	**Data type:**	**Comment:**

Output parameter:	**Data type:**	**Comment:**
aMoveOut	Array[0..11] of BYTE	Output array of stepper module

Graphical description:



Functional description:

This function block handles the access to the stepper module. The variables aMoveIn and aMoveOut should be mapped to the input and output addresses of the module. This block should be used once for each stepper module.

MC3_Power

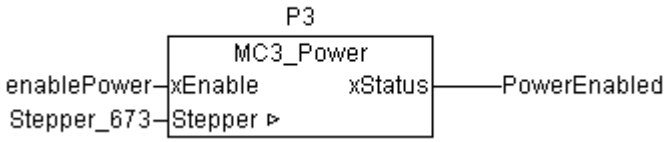
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_Power		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute action

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xStatus	BOOL	Power stage enabled

Graphical description:



Functional description:

- This functionblock enables the power stage of the stepper module.
- Bit 0 in the Control Byte 1 ist directly controlled
- The output xStatus displays directly Bit 0 from Status Byte 1

MC3_Stop

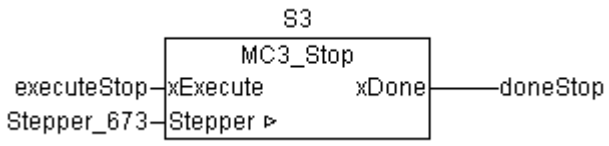
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_Stop		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute action

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Stepper stopped

Graphical description:



Functional description:

- This functionblock allows to stop the stepper motor. The deceleration ramp is determined by the configuration value AccelerationStopFast.
- Bit 1 in the Control Byte 1 ist directly controlled
- The output xDone displays the inverted Bit 1 from Status Byte 1.

MC3_Reset

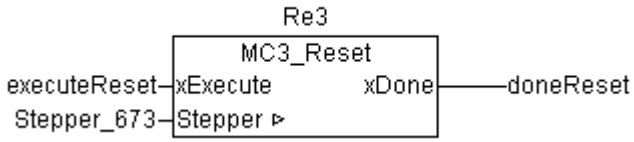
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_Reset		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute reset

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Reset performed

Graphical description:



Functional description:

- This functionblock performs a reset.
- Bit 7 in the Control Byte 3 ist directly controlled
- The output xDone displays the Bit 7 from Status Byte 3.

MC3_ReadActualPosition

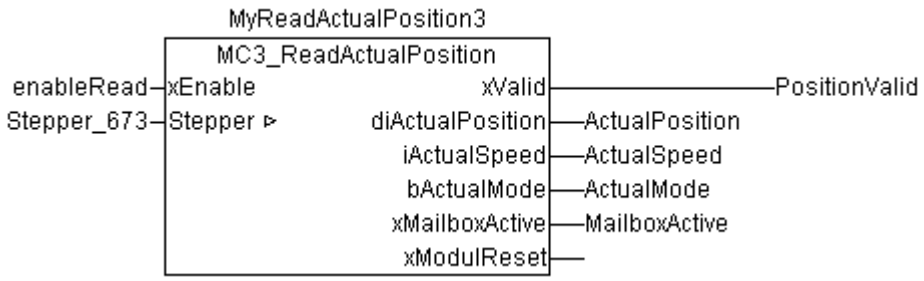
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_ReadActualPosition		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xEnable	BOOL	Read position and speed

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xValid	BOOL	Position valid
diActualPosition	DINT	Actual position
iActualSpeed	INT	Actual speed
bActualMode	WORD	Actual mode: 1:Single Positioning 2:Drive Program 4: Homing
xMailboxActive	BOOL	Mailbox active
xModuleReset	BOOL	The modul has a reset performed

Graphical description:



Functional description:

This functionblock shows the actual position as well as the actual speed. Both values are valid if the output xValid is True.

The output bActualMode displays the operating modes according to the manual:
1:Single positioning,2:Drive program,4:Homing,8:VelocityControl,16:Drive by Mailbox

MC3_MoveAbsolute

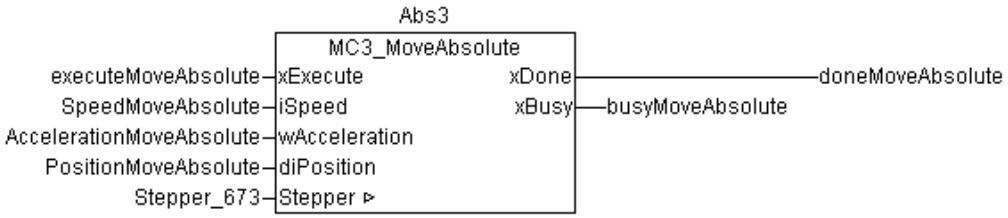
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_MoveAbsolute		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute absolute positioning job
iSpeed	INT	Reference speed
wAcceleration	WORD	Reference acceleration
diPosition	DINT	Reference position

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Positioning job finished
xBusy	BOOL	Busy
xError	BOOL	Error occurred while positioning

Graphical description:



Functional description:

- The positioning job is defined by the inputs iSpeed, wAcceleration and diPosition. The parameter iSpeed is allowed in the range of 1..25000 while acceleration and deceleration are allowed from 0..32767. The job will be started by the variable xExecute.
- Parameter changes on the fly are not supported.

MC3_MoveRelative

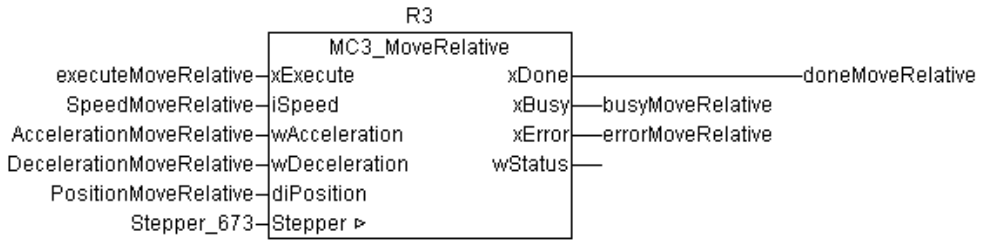
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_MoveRelative		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute relative positioning job
diDistance	DINT	Reference distance
iVelocity	INT	Reference velocity
wAcceleration	WORD	Reference acceleration
wDeceleration	WORD	Reference deceleration

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Positioning job finished
xBusy	BOOL	Busy
xError	BOOL	Error occurred while positioning
wStatus	WORD	MSB MailboxOpcode LSB Opcode details Details in the stepper manual

Graphical description:



Functional description:

- The positioning job is defined by the inputs iSpeed, wAcceleration, wDeceleration and diPosition. The parameter iSpeed is allowed in the range of 1..25000 while acceleration and deceleration are allowed from 0..32767. The job will be started by the variable xExecute.

MC3_Home

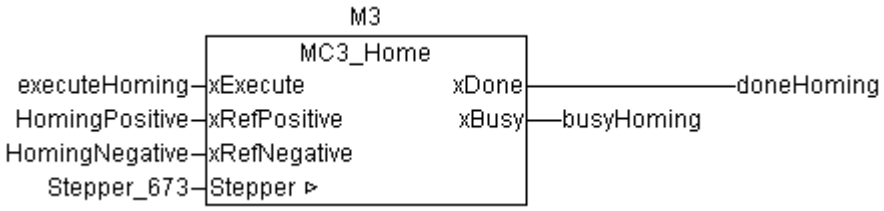
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_Home		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute relative homing job
xRefPositive	BOOL	Reference in positive direction
xRefNegative	BOOL	Reference in negative direction

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Positioning job finished
xBusy	BOOL	Busy

Graphical description:



Functional description:

This functionblock allows to start a homing job.

Please make sure one direction is choosen if the input xExecute becomes high.

Homing speed and acceleration a configured by the configuration table (SetupSpeed and SetupAcceleration).

MC3_DriveProgram

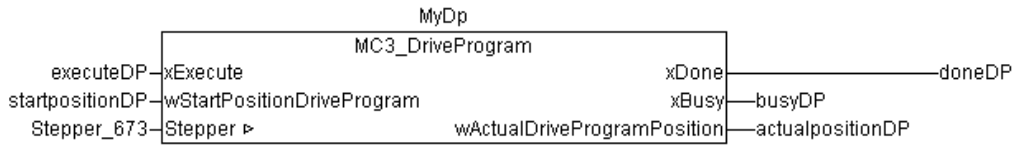
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_DriveProgram		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute relative homing job
wStartPositionDriveProgram	WORD	Start position of the drive program

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_Stepper Communication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Positioning job finished
xBusy	BOOL	Busy
wActualDriveProgramPosition	WORD	This line of the drive programm will be executed actually

Graphical description:



Functional description:

This functionblock allows to execute a drive program. The input wStartPositionDriveProgram allows to determine the start address of the drive program.

MC3_SetPosition

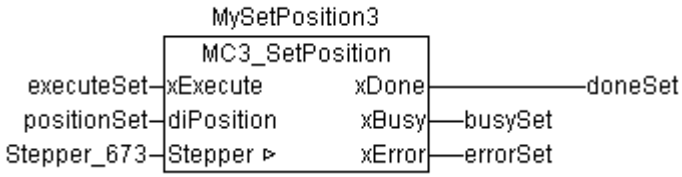
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_SetPosition		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute movement
diPosition	DINT	Reference position

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Position set
xBusy	BOOL	Busy
xError	BOOL	Error occurred while writting position

Graphical description:



Functional description:

- This functionblock allows to set the actual position.
-

This block activates the mailbox.

MC3_StepperControl_Basic

WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_StepperControl_Basic		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:			

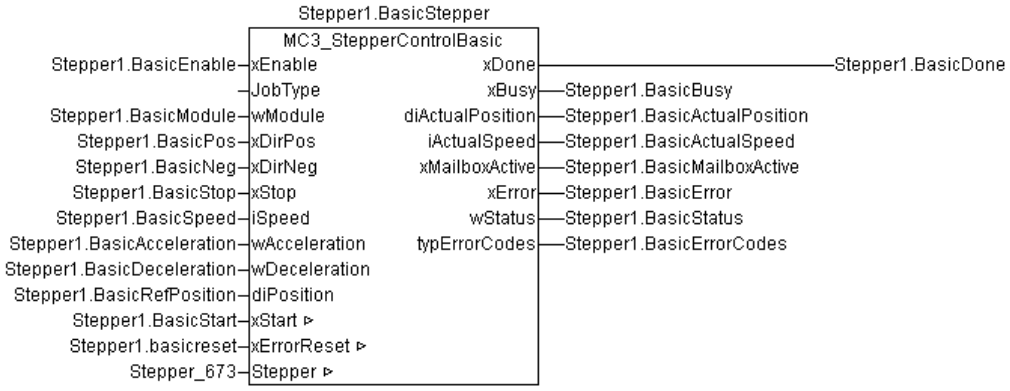
Input parameter:	**Data type:**	**Comment:**
xEnable	BOOL	Enable module
JobType	MC3_Mode	0:MoveAbsolute 1:MoveRelative 2:Homing 3:Jogging 4:Velocity Control 6: Drive program
wModule	WORD	670:Module 750-670 671:Module 750-671 672:Module 750-672 673:Module 750-673
xDirPos	BOOL	Positive direction for Jog mode and homing mode
xDirNeg	BOOL	Negative direction for Jog mode and homing mode
xStop	BOOL	Stop movement, Acceleration_Stop_Fast value(see configuration table) used for ramp down
iSpeed	INT	Speed
wAcceleration	WORD	Acceleration
wDeceleration	WORD	Deceleration
diPosition	DINT	Target position for positioning

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block
xStart	BOOL	Start movement
xErrorReset	BOOL	Reset error

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Job finished

WAGO-I/O-*PRO* 32 Library elements		
xBusy	BOOL	Job busy
diActualPosition	DINT	Actual position
iActualSpeed	INT	Actual speed
xMailboxActive	BOOL	Due to active mailbox, the values for diActualPosition and diActualSpeed are latched and will no more be updated
xError	BOOL	Error
wStatus	WORD	MSB MailboxOpcode LSB Opcode details Details in the stepper manual
typErrorCodes	MC1_ERROR_CODES	Error description

Graphical description:



Functional description:

WAGO-I/O-*PRO* 32 Library elements

- This functionblock supports different modes of the stepper modul.

0:Absolute positioning
1:Relative positioning
2:Homing
3:Jogging
4:Velocity control
6: Drive program

- Absolute positioning

The positioning job is defined by the inputs iSpeed, wAcceleration, wDeceleration and diPosition. The parameter iSpeed is allowed in the range of 1..25000 while acceleration and deceleration are allowed from 0..32767.

The job will be started by the variable xStart. If the job is done, the variable xStart will be reset by the functionblock.

- Relative positioning

The positioning job is defined by the inputs iSpeed, wAcceleration, wDeceleration and diPosition. The parameter iSpeed is allowed in the range of 1..25000 while acceleration and deceleration are allowed from 0..32767. The job will be started by the variable xStart. If the job is done, the variable xStart will be reset by the functionblock.

WAGO-I/O-*PRO* 32 Library elements

- Homing

The Homing job is defined by the inputs xDirPos or xDirNeg and xStart. The job will be started by the variable xStart. If the job is done, the variable xStart will be reset by the functionblock. Homing speed, acceleration and mode are defined through the values in the configuration table.

- Jogging

Depending on the used module the jogging mode is started differently.

750-670,750-671:

The Jogging job is defined by the inputs xDirPos or xDirNeg and xStart. The job will be started by the variable xDirPos or xDirNeg and xStart=True, and runs as long as the appropriate input xDirPos or xDirNeg is true.

Jogging speed and acceleration are defined through the values in the configuration table(SetupSpeed and Acceleration_Setup).

750-672,750-673:

The Jogging job is defined by the input xStart. The job will be started by physical inputs of the module.

Jogging speed and acceleration are defined through the values in the configuration table(SetupSpeed and Acceleration_Setup).

WAGO-I/O-*PRO* 32 Library elements

- Velocity Control

The Velocity control job is defined by the inputs iSpeed, wAcceleration, wDecceleration. The parameter iSpeed is allowed in the range of -25000..25000.

While running it is possible to change the speed. Therfore the input iSpeed has to be set to the new speed and the xStart variable needs to be set again.

General Inputs:

- The input xStop will stop each movement. The stop ramp is defined by the configuration parameter Acceleration_Stop_Fast (address 46).
- The input xEnable needs to be true to run the stepper. If this variable is set to zero the module will stop immediately without any ramp.
- xReset allows to reset an error.

General Outputs

- xDone indicates that a positioning or homing job is finished. In case of the velocity control mode this output indicates that the reference speed is reached.
- xBusy is high while a job is running
- xMailBoxActive indicates, that the values for diActualPosition and diActualSpeed are latched and will no more be updated
- xError indicates any error
- wError shows details according to the type MC3_ERROR_CODES
- typErrorCodes shows details according to the type MC3_ERROR_CODES in verbal form

MC3_ConfigurationTable

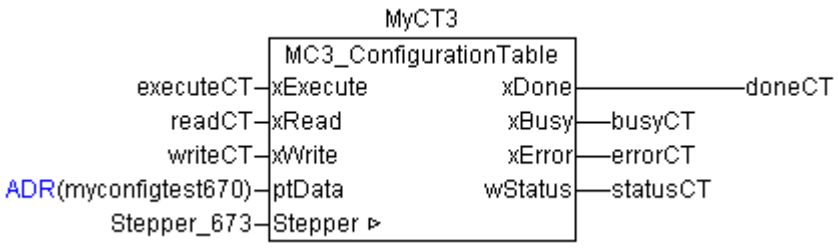
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_ConfigurationTable		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:			

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute action
xRead	BOOL	Read configuration table
xWrite	BOOL	Write configuration table
ptData	POINTER TO ARRAY[0..511] OF BYTE	A user defined data type with all configuration values

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Operationed finished
xBusy	BOOL	Operation busy
xError	WORD	An error occurred while executing
wStatus	WORD	MSB MailboxOpcode LSB Opcode details Details according to the stepper manual 16#99:Timeout

Graphical description:



WAGO-I/O-*PRO* 32 Library elements
Functional description:
• This functionblock allows to read and write the configuration table at once To start the process set xExecute to True. If the action is finished the output xDone becomes True. • The output wStatus shows any error. Therfore the word is separated in two Bytes. The MSB shows the actual Mailbox Opcode and the LSB the error details for this special opcode,e.g.:16#4331->Opcode 0x43, error 0x31. •  After writing the configuration table the modul resets itself. Therefore the actual position will be reset to Zero.

MC3_ConfigurationValue

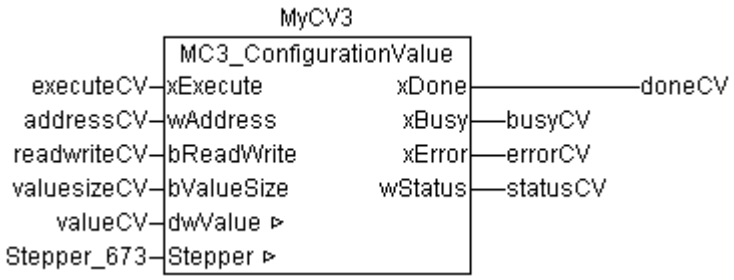
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_ConfigurationValue		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:			

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute read or write process
wAddress	WORD	Address of the parameter in the configuration table
bReadWrite	BYTE	0:Read parameter 1:Write parameter 2:Write and safe parameter
bValueSize	BYTE	Size in byte of the parameter according to configuration table

Input/Output parameter:	**Data type:**	**Comment:**
dwValue	DWORD	Parameter value
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Operationed finished
xBusy	BOOL	Operation busy
xError	WORD	An error occurred while executing
wStatus	WORD	MSB MailboxOpcode LSB Opcode details Details according to the stepper manual 16#99:Timeout

Graphical description:



WAGO-I/O-*PRO* 32 Library elements
Functional description:
• This functionblock allows to read and write a single parameter from the configuration table. Writing differentiates between temporarily changes which are lost after power on of the stepper modul and permant fixed changes. • The output wStatus shows any error. Therfore the word is separated in two Bytes. The MSB shows the actual Mailbox Opcode and the LSB the error details for this special opcode,e.g.:16#5123->Opcode 0x51, error 0x23.

MC3_DriveProgramTable

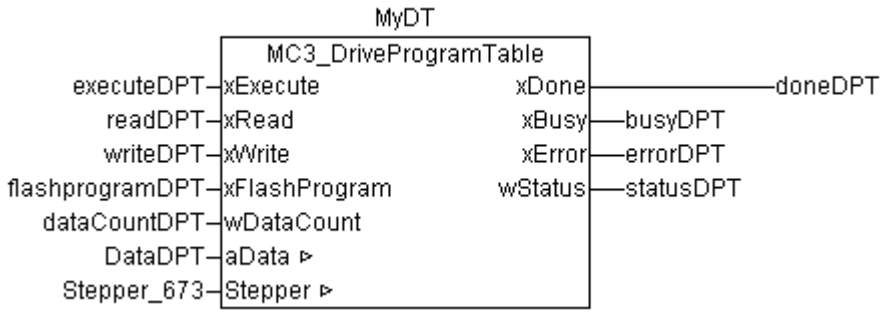
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_DriveProgramTable		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:			

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute drive program download or upload
xRead	BOOL	Read drive program table
xWrite	BOOL	Write drive program table
xFlashProgram	BOOL	Flash drive program
wDataCount	WORD	Number of data sets (1..400)

Input/Output parameter:	**Data type:**	**Comment:**
aData	ARRAY[0..gc_DriveProgramTableSize] OF BYTE	An array defining drive program details
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Operationed finished
xBusy	BOOL	Operation busy
xError	WORD	An error occurred while executing
wStatus	WORD	MSB MailboxOpcode LSB Opcode details Details according to the stepper manual 16#99:Timeout

Graphical description:



WAGO-I/O-*PRO* 32 Library elements
Functional description:
This functionblock allows to read and write the drive program table. • If the input xFlashProgram is True the drive program will be stored to the flash memory after it is downloaded to the module. After power on reset the drive program is therefore still available can be directly executed by using the function block MC3_DriveProgram. • The output wStatus shows any error. Therfore the word is separated in two Bytes. The MSB shows the actual Mailbox Opcode and the LSB the error details for this special opcode,e.g.:16#4331->Opcode 0x43, error 0x31.

MC3_ReadError

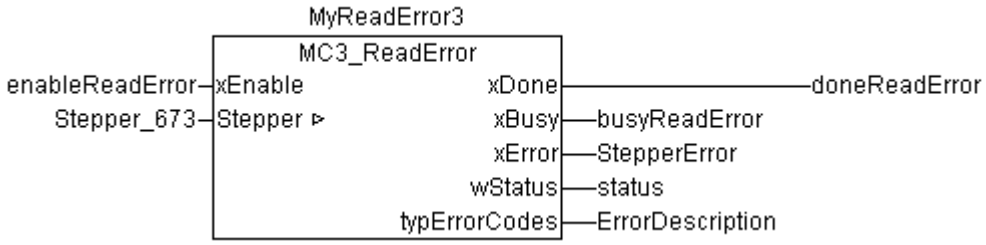
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_ReadError		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xEnable	BOOL	Read error code

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Operationed finished
xBusy	BOOL	Operation busy
xError	WORD	An error occurred while executing
wStatus	WORD	Error codes according to the manual
typErrorCodes	MC3_Error	Verbal error description of wStatus

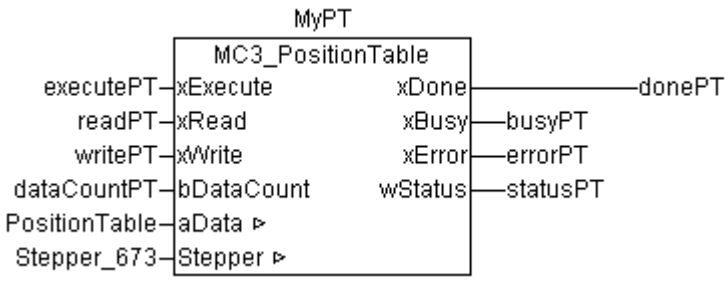
Graphical description:



Functional description:

- This functionblock allows to read the error code which is displayed by the modules LED.
- The output xError shows directly the status of Bit 7 from Status Byte 2. This output is independend from the input xEnable
- The error code wStatus will only be get from the module if the input xEnable is True. In this case the mailbox mode is activated to perform the command 16#49(GetErrorInformation). Make sure no other functionblock is in need of the mailbox or the process image Byte 2 up to Byte 8.

MC3_PositionTable

WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_PositionTableReadWrite		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		
Input parameter:	**Data type:**	**Comment:**	
xWrite	BOOL	False:Read position table True: Write position table	
wDataCount	WORD	Number of data sets for up-/download	
Input/Output parameter:	**Data type:**	**Comment:**	
xEnable	BOOL	Enable read or write process.Will be reset by the functionblock.	
aData	Array[0..199] of BYTE	50 Positions á 4 bytes (LSB … … MSB)	
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block	
Output parameter:	**Data type:**	**Comment:**	
xDone	BOOL	Operationed finished	
xBusy	BOOL	Operation busy	
xError	WORD	An error occurred while executing	
wStatus	WORD	MSB MailboxOpcode LSB Opcode details Details according to the stepper manual 99:Timeout	
Graphical description:			
			

WAGO-I/O-*PRO* 32 Library elements

Functional description:

- This functionblock allows to read and write the position table at once

If the inpux xWrite is false, the table will be read. To start the reading process it is necessary to set the variable xEnable to True. The functionblock will reset the variable if the job is finished.

To write data to the position table the variable xWrite needs to be True.

- The output wStatus shows any error. Therfore the word is separated in two Bytes. The MSB shows the actual Mailbox Opcode and the LSB the error details for this special opcode, e.g.:16#4331->Opcode 0x43, error 0x31.

MC3_RestoreDefault

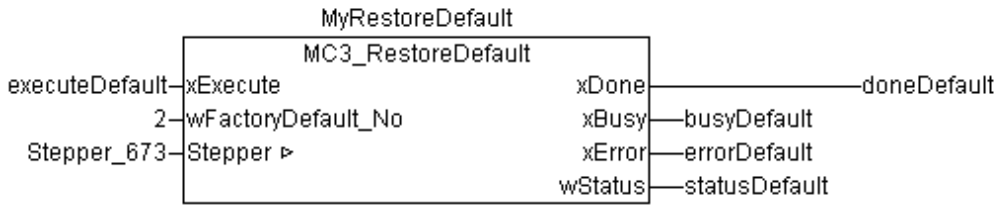
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_RestoreDefault		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
wFactoryDefault_No	WORD	2:Factory Default 1 3:Factory Default 2

Input/Output parameter:	**Data type:**	**Comment:**
xEnable	BOOL	Enable the restore process.Will be reset by the functionblock.
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
wStatus	WORD	MSB MailboxOpcode LSB Opcode details Details according to the stepper manual 16#99:Timeout

Graphical description:



Functional description:

This functionblock allows to restore factory defaults. To start the process it is necessary to set the variable xExecutee to True.

The output wStatus shows any error. Therfore the word is separated in two Bytes. The MSB shows the actual Mailbox Opcode and the LSB the error details for this special opcode,e.g.:16#4331->Opcode 0x43, error 0x31.

●

MC3_ModeSelect

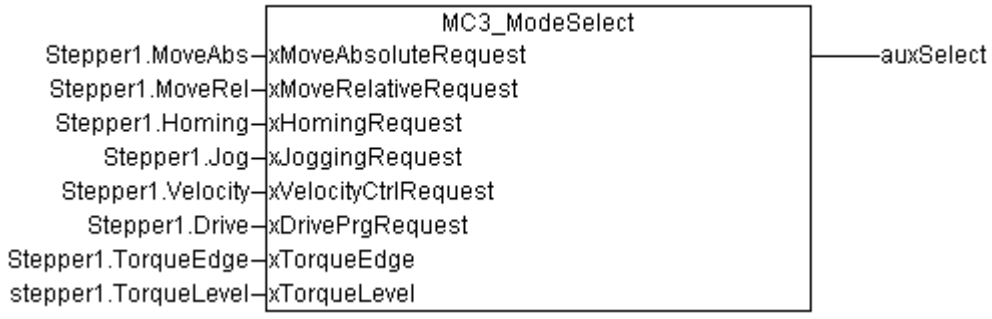
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_ModeSelect		
Type:	Function X	Function block	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671, 750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xMoveAbsoluteRequest	BOOL	Choose absolute positioning mode
xMoveRelativeRequest	BOOL	Choose relativee positioning mode
xHomingRequest	BOOL	Choose homing mode
xJoggingRequest	BOOL	Choose jogging mode
xVelocityCtrlRequest	BOOL	Choose velocity control mode
xDrivePrgRequest	BOOL	Choose drive program mode
xTorqueEdge	BOOL	Choose torque edge mode
xTorqueLevel	BOOL	Choose torque level mode

Input/Output parameter:	**Data type:**	**Comment:**

Output parameter:	**Data type:**	**Comment:**
MC3_ModeSelect	MC3_Mode	MC3_MoveAbsolute:=0, MC3_MoveRelative:=1, MC3_Homing:=2, MC3_JogMode:=3, MC3_VelocityControl:=4, MC3_DriveProgramMode := 6, MC3_TorqueControl_Edge:=7, MC3_TorqueControl_Level:=8

Graphical description:



Functional description:

Select one operating mode

750-670

MC3_PWM_Mode_670

WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_PWM_Mode_670		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670**		

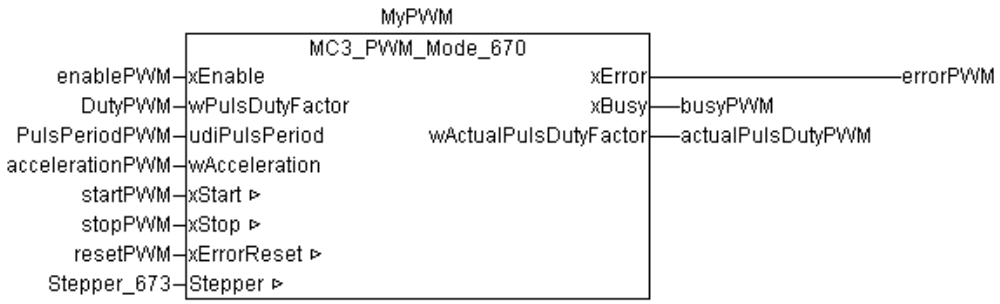
Input parameter:	**Data type:**	**Comment:**
xEnable	BOOL	Enable module
wPulsDutyFactor	WORD	Puls duty of the signal e.g. 5000=50%
udiPulsPeriod	UDINT	Periode in µs (0.01 Hz ..500.000 Hz→2..100.000.000)
wAcceleration	WORD	Acceleration

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block
xStop	BOOL	Stop outputs
xStart	BOOL	Start outputs
xErrorReset	BOOL	Reset error

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Operationed finished
xBusy	BOOL	Operation busy
xError	WORD	An error occurred while executing
wStatus	WORD	MSB MailboxOpcode LSB Opcode details Details according to the stepper manual 99:Timeout
wActualPulsDutyFactor	WORD	Actual puls duty factor

Graphical description:

WAGO-I/O-*PRO* 32 Library elements



Functional description:

This functionblock supports the pulswidth mode of the stepper modul 750-670.

The inputs wPulsDutyFactor, udiPulsPeriod and wAcceleration define the output signal.

High wAcceleration values ensure a quick increase of the pulswidth rate. Additional it may be necessary to increase the default value for ACC_Fact(see the configuration table) from 80 to 10000 to archieve an even steaper increase.

Once started, changes in the input parameters will only be overtaken by a positive edge of the xStart input.

MC3_Jog_670

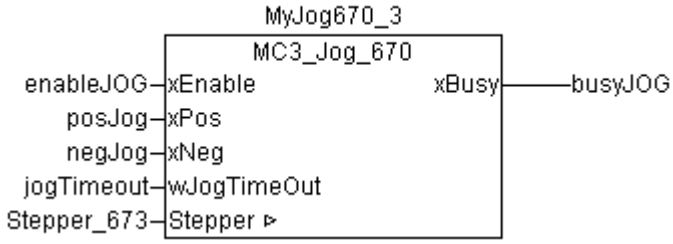
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_Jog_670		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671**		

Input parameter:	**Data type:**	**Comment:**
xEnable	BOOL	Activate jog mode
xPos	BOOL	Jog in positive direction
xNeg	BOOL	Jog in negative direction
wJogTimeout	WORD	0:no time limit 1..65535 time limit in ms

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xBusy	BOOL	Busy

Graphical description:



Functional description:

This functionblock allows to jog a stepper motor.

MC3_MoveVelocity_670

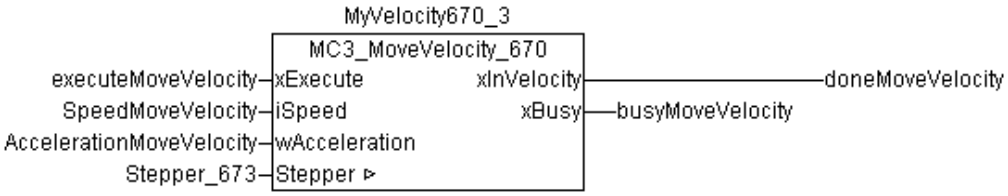
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_MoveVelocity_670		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-670, 750-671**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute movement
iVelocity	INT	Reference speed
wAcceleration	WORD	Reference acceleration

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xInVelocity	BOOL	Target speed reached
xBusy	BOOL	Busy

Graphical description:



Functional description:

This functionblock allows velocity control of a stepper motor.

-

This block changes the configuration value “Application Selector”. Please make sure this parameter is set to the appropriate values for different operation modes like positioning. Please use MC3_ConfigurationValue to modify this value.

750-672

MC3_MoveVelocity_672

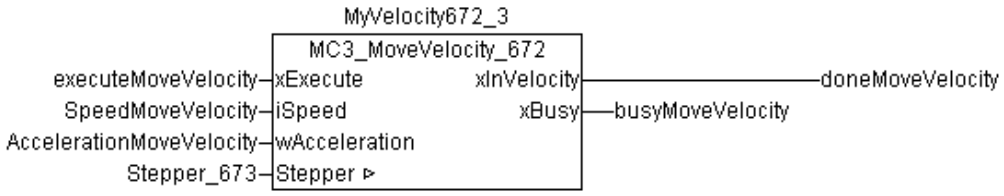
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_MoveVelocity_672		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute movement
iSpeed	INT	Reference speed
wAcceleration	WORD	Reference acceleration

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xInVelocity	BOOL	Target speed reached
xBusy	BOOL	Busy
xError	BOOL	Error occurred while positioning

Graphical description:



Functional description:

This functionblock allows velocity control of a stepper motor.

- While running the speed may be changed.

MC3_Jog_672

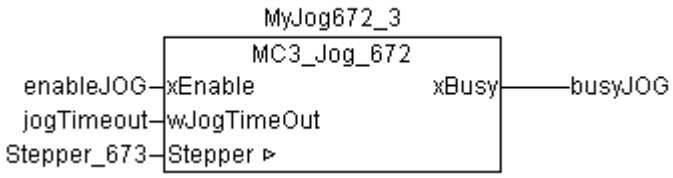
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_Jog_672		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-672, 750-673**		

Input parameter:	**Data type:**	**Comment:**
xEnable	BOOL	Activate jog mode
wJogTimeout	WORD	0: no time limit 1..65535: Time limit in ms

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xBusy	BOOL	Busy

Graphical description:



Functional description:

This functionblock allows to jog a stepper motor.
The jogging is performed by digital inputs directly on the module.

MC3_MoveTorque

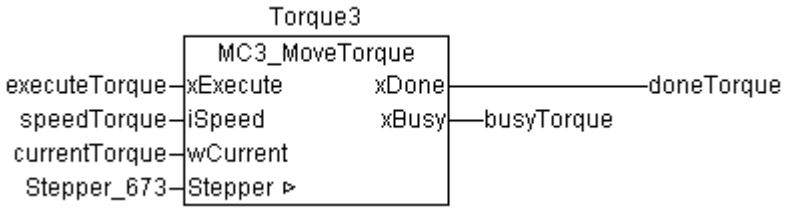
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_MoveTorque		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-673**		

Input parameter:	**Data type:**	**Comment:**
xExecute	BOOL	Execute job
iSpeed	INT	Reference speed
wCurrent	WORD	Reference current

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Positioning job finished
xBusy	BOOL	Busy

Graphical description:



Functional description:

- The move torque job is defined by the inputs iSpeed and wCurrent. The parameter wCurrent is allowed in the range of 1..150. The job will be started by the variable xExecute.
- Parameter changes on the fly are not supported.

MC3_MoveTorque2

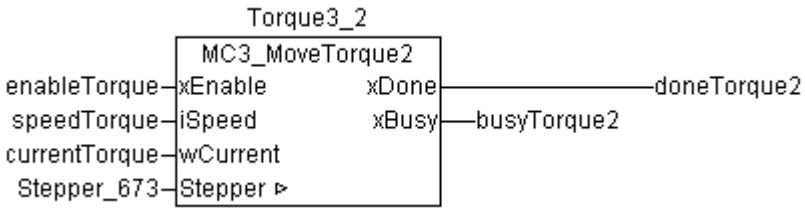
WAGO-I/O-*PRO* 32 Library elements			
Category:	Motion Control		
Name:	MC3_MoveTorque2		
Type:	Function	Function block **X**	Program
Library name:	Stepper_03.lib		
Requiered libraries			
Applicable to:	**750-673**		

Input parameter:	**Data type:**	**Comment:**
xEnable	BOOL	Enable speed job with torque control
iSpeed	INT	Reference speed
wCurrent	WORD	Reference current

Input/Output parameter:	**Data type:**	**Comment:**
Stepper	MC3_StepperCommunication	Instance of the stepper communication function block

Output parameter:	**Data type:**	**Comment:**
xDone	BOOL	Job finished
xBusy	BOOL	Busy

Graphical description:



Functional description:

- The job is defined by the inputs iSpeed and wCurrent. The parameter iSpeed is allowed in the range of 1..25000 while wCurrent is allowed from 1..150. The job will be enabled by the variable xEnable.
- Parameter changes on the fly are supported.