



Subset of the

Technical Specification

PLCopen - Technical Committee 2 – Task Force

Function blocks for motion control
(Formerly Part 1 and Part 2)

Version 2.0

Appendix B

Compliance Procedure and Compliance List

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March 17, 2011.

Appendix B. Compliance Procedure and Compliance List

Listed in this Appendix are the requirements for the compliance statement from the supplier of the Motion Control Function Blocks. The compliance statement consists of two main groups: supported data types and supported Function Blocks, in combination with the applicable inputs and outputs. The supplier is required to fill out the tables for the used data types and Function Blocks, according to their product, committing their support to the specification.

By submitting these tables to PLCopen, and after approval by PLCopen, the list will be published on the PLCopen website, www.plcopen.org as well as a shortform overview, as specified in Appendix B 2 Supported Data types and Appendix B 3 Overview of the Function Blocks as below.

In addition to this approval, the supplier is granted access and usage rights of the PLCopen Motion Control logo, as described in Appendix B 4:

The PLCopen Motion Control Logo and Its Usage..



Data types

The data type REAL listed in the Function Blocks and parameters (e.g. for velocity, acceleration, distance, etc.) may be exchanged to SINT, INT, DINT or LREAL without to be seen as incompliant to this standard, as long as they are consistent for the whole set of Function Blocks and parameters.

Implementation allows the extension of data types as long as the basic data type is kept. For example: WORD may be changed to DWORD, but not to REAL.

Function Blocks and Inputs and Outputs

An implementation which claims compliance with this PLCopen specification shall offer a set of Function Blocks for motion control, meaning one or more Function Blocks, with at least the **basic** input and output variables, marked as “**B**” in the tables. These inputs and outputs have to be supported to be compliant.

For higher-level systems and future extensions any subset of the **extended** input and output variables, marked as “**E**” in the tables can be implemented.

Vendor specific additions are marked with “**V**”, and can be listed as such in the supplier documentation.

- | | |
|--|---|
| - Basic input/output variables are mandatory | Marked in the tables with the letter “ B ” |
| - Extended input /output variables are optional | Marked in the tables with the letter “ E ” |
| - Vendor Specific additions | Marked in the vendor’s compliance documentation with “ V ” |

All the vendor specific items will not be listed in the comparison table on the PLCopen website, but in the detailed vendor specific list, which also is published.

All vendor specific in- and outputs of all FBs must be listed in the certification list of the supplier. With this, the certification listing from a supplier describes all the I/Os of the relevant FBs, including vendor-specific extensions, and thus showing the complete FBs as used by the supplier.

Appendix B 1. Statement of Supplier

Supplier name	Siemens AG
Supplier address	Gleiwitzer Str. 555
City	90475 Nuremberg
Country	Germany
Telephone	+49 (911) 895-0
Fax	
Email address	hans-benno.bruss@siemens.com
Product Name	SIMATIC S7-1500 T-CPU
Product version	V02.00.01
Release date	30.09.2016

I hereby state that the following tables as filled out and submitted do match our product as well as the accompanying user manual, as stated above.

Hans Benno Bruss

Date of signature (dd/mm/yyyy): 17.01.2017

Signature:

Appendix B 2. Supported Data types

Defined datatypes with MC library:	Supported	If not supported, which datatype used
BOOL	YES	
INT	YES	Additional DINT
WORD	YES	Additional DWORD
REAL	YES	Additional LREAL
ENUM	No	INT is used
UINT	YES	

Table 1: Supported datatypes

Within the specification the following derived datatypes are defined. Define which of these structures are used in this system:

Derived datatypes:	Where used	Supported	Which structure
AXIS_REF	Nearly all FBs	YES	TO_Axis
MC_DIRECTION (extended)	MC_MoveAbsolute MC_MoveVelocity MC_TorqueControl MC_MoveContinuousAbsolute	YES	INT
MC_TP_REF	MC_PositionProfile	No	
MC_TV_REF	MC_VelocityProfile	No	
MC_TA_REF	MC_AccelerationProfile	No	
MC_CAM_REF	MC_CamTableSelect	No	
MC_CAM_ID (extended)	MC_CamTableSelect MC_CamIn	YES	TO_Cam
MC_START_MODE (extended)	MC_CamIn MC_CamTableSelect	No	
MC_BUFFER_MODE	Buffered FBs	No	
MC_EXECUTION_MODE	MC_SetPosition MC_WriteParameter MC_WriteBoolParameter MC_WriteDigitalOutput MC_CamTableSelect	No	
MC_SOURCE	MC_ReadMotionState MC_CamIn MC_GearIn MC_GearInPos MC_CombineAxes MC_DigitalCamSwitch	No	
MC_SYNC_MODE	MC_GearInPos	No	
MC_COMBINE_MODE	MC_CombineAxes	No	
MC_TRIGGER_REF	MC_TouchProbe MC_AbortTrigger	YES	TO_MeasuringInput
MC_INPUT_REF	MC_ReadDigitalInput	No	
MC_OUTPUT_REF	MC_DigitalCamSwitch MC_ReadDigitalOutput MC_WriteDigitalOutput	YES	TO_OutputCam TO_CamTrack
MC_CAMSWITCH_REF	MC_DigitalCamSwitch	No	Configured in TO_CamTrack or TO_OutputCam
MC_TRACK_REF	MC_DigitalCamSwitch	No	Configured in TO_CamTrack

Table 2: Supported derived datatypes

Appendix B 3. Overview of the Function Blocks

Single Axis Function Blocks	Supported as V1.0/ V1.1/ V2.0 or Not	Comments (<= 48 char.)
MC_Power	V2.0	
MC_Home	V2.0	
MC_Stop	No	
MC_Halt	V2.0	
MC_MoveAbsolute	V2.0	
MC_MoveRelative	V2.0	
MC_MoveAdditive	No	
MC_MoveSuperimposed	V2.0	
MC_HaltSuperimposed	No	
MC_MoveVelocity	V2.0	
MC_MoveContinuousAbsolute	No	
MC_MoveContinuousRelative	No	
MC_TorqueControl	No	
MC_PositionProfile	No	
MC_VelocityProfile	No	
MC_AccelerationProfile	No	
MC_SetPosition	No	Supported by MC_Home
MC_SetOverride	No	Supported by system functions
MC_ReadParameter & MC_ReadBoolParameter	No	Supported by system functions
MC_WriteParameter & MC_WriteBoolParameter	No	Supported by system functions
MC_ReadDigitalInput	No	Supported by system functions
MC_ReadDigitalOutput	No	Supported by system functions
MC_WriteDigitalOutput	No	Supported by system functions
MC_ReadActualPosition	No	Supported by system functions
MC_ReadActualVelocity	No	Supported by system functions
MC_ReadActualTorque	No	Supported by system functions
MC_ReadStatus	No	Supported by system functions
MC_ReadMotionState	No	Supported by system functions
MC_ReadAxisInfo	No	Supported by system functions
MC_ReadAxisError	No	Supported by system functions
MC_Reset	V2.0	
MC_DigitalCamSwitch	No	Implemented with MC_OutputCam, MC_CamTrack
MC_TouchProbe	No	Implemented with MC_MeasuringInput
MC_AbortTrigger	No	Implemented with MC_AbortMeasuringInput
Multi-Axis Function Blocks	Supported as V1.0/ V1.1/ V2.0 or Not	Comments (<= 48 char.)
MC_CamTableSelect	No	Supported by MC_CamIn
MC_CamIn	V2.0	
MC_CamOut	No	
MC_GearIn	V2.0	
MC_GearOut	No	
MC_GearInPos	V2.0	
MC_PhasingAbsolute	V2.0	
MC_PhasingRelative	V2.0	
MC_CombineAxes	No	

Table 3: Short overview of the Function Blocks

Appendix B 3.1 MC_Power

If Supported	MC_Power	Sup. Y/N	Comments
VAR_IN_OUT			
B	Axis	YES	As VAR_INPUT
VAR_INPUT			
B	Enable	YES	
E	EnablePositive		
E	EnableNegative		
VAR_OUTPUT			
B	Status	YES	
E	Valid		
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.2 MC_Home

If Supported	MC_Home	Sup. Y/N	Comments
VAR_IN_OUT			
B	Axis	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
B	Position	YES	
E	BufferMode		
VAR_OUTPUT			
B	Done	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.3 MC_Stop

If Supported	MC_Stop		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
E	Deceleration		
E	Jerk		
VAR_OUTPUT			
B	Done		
E	Busy		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.4 MC_Halt

If Supported	MC_Halt	Sup. Y/N	
VAR_IN_OUT			
B	Axis	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
E	Deceleration	YES	
E	Jerk	YES	
E	BufferMode		
VAR_OUTPUT			
B	Done	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.5 MC_MoveAbsolute

If Supported	MC_MoveAbsolute	Sup.Y/N	Comments
VAR_IN_OUT			
B	Axis	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
E	ContinuousUpdate		
B	Position	YES	
B	Velocity	YES	
E	Acceleration	YES	
E	Deceleration	YES	
E	Jerk	YES	
B	Direction	YES	
E	BufferMode		
VAR_OUTPUT			
B	Done	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.6 MC_MoveRelative

If Supported	MC_MoveRelative	Sup. Y/N	Comments
VAR_IN_OUT			
B	Axis	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
E	ContinuousUpdate		
B	Distance	YES	
E	Velocity	YES	
E	Acceleration	YES	
E	Deceleration	YES	
E	Jerk	YES	
E	BufferMode		
VAR_OUTPUT			
B	Done	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.7 MC_MoveAdditive

If Supported	MC_MoveAdditive		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
E	ContinuousUpdate		
B	Distance		
E	Velocity		
E	Acceleration		
E	Deceleration		
E	Jerk		
E	BufferMode		
VAR_OUTPUT			
B	Done		
E	Busy		
E	Active		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.8 MC_MoveSuperimposed

If Supported	MC_MoveSuperimposed		Comments
VAR_IN_OUT			
B	Axis	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
E	ContinuousUpdate		
B	Distance	YES	
E	VelocityDiff	YES	
E	Acceleration	YES	
E	Deceleration	YES	
E	Jerk	YES	
VAR_OUTPUT			
B	Done	YES	
E	Busy	YES	
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	
E	CoveredDistance		

Appendix B 3.9 MC_HaltSuperimposed

If Supported	MC_HaltSuperimposed		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
E	Deceleration		
E	Jerk		
VAR_OUTPUT			
B	Done		
E	Busy		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.10 MC_MoveVelocity

If Supported	MC_MoveVelocity	Sup. Y/N	Comments
VAR_IN_OUT			
B	Axis	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
E	ContinuousUpdate		
E	Velocity	YES	
E	Acceleration	YES	
E	Deceleration	YES	
E	Jerk	YES	
E	Direction	YES	
E	BufferMode		
VAR_OUTPUT			
B	InVelocity	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.11 MC_MoveContinuousAbsolute

If Supported	MC_MoveContinuousAbsolute		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
E	ContinuousUpdate		
B	Position		
B	EndVelocity		
B	Velocity		
E	Acceleration		
E	Deceleration		
E	Jerk		
E	Direction		
E	BufferMode		
VAR_OUTPUT			
B	InEndVelocity		
E	Busy		
E	Active		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.12 MC_MoveContinuousRelative

If Supported	MC_MoveContinuousRelative		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
E	ContinuousUpdate		
B	Distance		
B	EndVelocity		
B	Velocity		
E	Acceleration		
E	Deceleration		
E	Jerk		
E	BufferMode		
VAR_OUTPUT			
B	InEndVelocity		
E	Busy		
E	Active		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.13 MC_TorqueControl

If Supported	MC_TorqueControl		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
E	ContinuousUpdate		
B	Torque		
E	TorqueRamp		
E	Velocity		
E	Acceleration		
E	Deceleration		
E	Jerk		
E	Direction		
E	BufferMode		
VAR_OUTPUT			
B	InTorque		
E	Busy		
E	Active		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.14 MC_PositionProfile

If Supported	MC_PositionProfile		Comments
VAR_IN_OUT			
B	Axis		
B	TimePosition		
VAR_INPUT			
B	Execute		
E	ContinuousUpdate		
E	TimeScale		
E	PositionScale		
E	Offset		
E	BufferMode		
VAR_OUTPUT			
B	Done		
E	Busy		
E	Active		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.15 MC_VelocityProfile

If Supported	MC_VelocityProfile		Comments
VAR_IN_OUT			
B	Axis		
B	TimeVelocity		
VAR_INPUT			
B	Execute		
E	ContinuousUpdate		
E	TimeScale		
E	VelocityScale		
E	Offset		
E	BufferMode		
VAR_OUTPUT			
B	ProfileCompleted		
E	Busy		
E	Active		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.16 MC_AccelerationProfile

If Supported	MC_AccelerationProfile		Comments
VAR_IN_OUT			
B	Axis		
B	TimeAcceleration		
VAR_INPUT			
B	Execute		
E	ContinuousUpdate		
E	TimeScale		
E	AccelerationScale		
E	Offset		
E	BufferMode		
VAR_OUTPUT			
B	ProfileCompleted		
E	Busy		
E	Active		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 3.17 MC_SetPosition

If Supported	MC_SetPosition		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
B	Position		
E	Relative		
E	ExecutionMode		
VAR_OUTPUT			
B	Done		
E	Busy		
B	Error		
E	ErrorID		

Appendix B 3.18 MC_SetOverride

If Supported	MC_SetOverride		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Enable		
B	VelFactor		
E	AccFactor		
E	JerkFactor		
VAR_OUTPUT			
B	Enabled		
E	Busy		
B	Error		
E	ErrorID		

Appendix B 3.19 MC_ReadParameter & MC_ReadBoolParameter

If Supported	MC_ReadParameter		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Enable		
B	ParameterNumber		
VAR_OUTPUT			
B	Valid		
E	Busy		
B	Error		
E	ErrorID		
B	Value		

If Supported	MC_ReadBoolParameter		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Enable		
B	ParameterNumber		
VAR_OUTPUT			
B	Valid		
E	Busy		
B	Error		
E	ErrorID		
B	Value		

Name	B/E	R/W	Supp. Y/N	Comments
CommandedPosition	B	R		
SWLimitPos	E	R/W		
SWLimitNeg	E	R/W		
EnableLimitPos	E	R/W		
EnableLimitNeg	E	R/W		
EnablePosLagMonitoring	E	R/W		
MaxPositionLag	E	R/W		
MaxVelocitySystem	E	R		
MaxVelocityAppl	B	R/W		
ActualVelocity	B	R		
CommandedVelocity	B	R		
MaxAccelerationSystem	E	R		
MaxAccelerationAppl	E	R/W		
MaxDecelerationSystem	E	R		
MaxDecelerationAppl	E	R/W		
MaxJerkSystem	E	R		
MarkJerkAppl	E	R/W		

Table 4: Parameters for MC_Read(Bool)Parameter and MC_Write(Bool)Parameter

Appendix B 3.20 MC_WriteParameter & MC_WriteBoolParameter

If Supported	MC_WriteParameter		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
B	ParameterNumber		
B	Value		
E	ExecutionMode		
VAR_OUTPUT			
B	Done		
E	Busy		
B	Error		
E	ErrorID		

If Supported	MC_WriteBoolParameter		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Execute		
B	ParameterNumber		
B	Value		
E	ExecutionMode		
VAR_OUTPUT			
B	Done		
E	Busy		
B	Error		
E	ErrorID		

Appendix B 3.21 MC_ReadDigitalInput

If Supported	MC_ReadDigitalInput		Comments
VAR_IN_OUT			
B	Input		
VAR_INPUT			
B	Enable		
E	InputNumber		
VAR_OUTPUT			
B	Valid		
E	Busy		
B	Error		
E	ErrorID		
B	Value		

Appendix B 3.22 MC_ReadDigitalOutput

If Supported	MC_ReadDigitalOutput		Comments
VAR_IN_OUT			
B	Output		
VAR_INPUT			
B	Enable		
E	OutputNumber		
VAR_OUTPUT			
B	Valid		
E	Busy		
B	Error		
E	ErrorID		
B	Value		

Appendix B 3.23 MC_WriteDigitalOutput

If Supported	MC_WriteDigitalOutput		Comments
VAR_IN_OUT			
B	Output		
VAR_INPUT			
B	Execute		
E	OutputNumber		
B	Value		
E	ExecutionMode		
VAR_OUTPUT			
B	Done		
E	Busy		
B	Error		
E	ErrorID		

Appendix B 3.24 MC_ReadActualPosition

If Supported	MC_ReadActualPosition		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Enable		
VAR_OUTPUT			
B	Valid		
E	Busy		
B	Error		
E	ErrorID		
B	Position		

Appendix B 3.25 MC_ReadActualVelocity

If Supported	MC_ReadActualVelocity		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Enable		
VAR_OUTPUT			
B	Valid		
E	Busy		
B	Error		
E	ErrorID		
B	Velocity		

Appendix B 3.26 MC_ReadActualTorque

If Supported	MC_ReadActualTorque		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Enable		
VAR_OUTPUT			
B	Valid		
E	Busy		
B	Error		
E	ErrorID		
B	Torque		

Appendix B 3.27 MC_ReadStatus

If Supported	MC_ReadStatus		Comments
VAR_IN_OUT			
B	Axis		
VAR_INPUT			
B	Enable		
VAR_OUTPUT			
B	Valid		
E	Busy		
B	Error		
E	ErrorID		
B	ErrorStop		
B	Disabled		
B	Stopping		
E	Homing		
B	Standstill		
E	DiscreteMotion		
E	ContinuousMotion		
E	SynchronizedMotion		

Appendix B 3.28 MC_ReadMotionState

If Supported	MC_ReadMotionState	Comments
VAR_IN_OUT		
B	Axis	
VAR_INPUT		
B	Enable	
E	Source	
VAR_OUTPUT		
B	Valid	
E	Busy	
B	Error	
E	ErrorID	
E	ConstantVelocity	
E	Accelerating	
E	Decelerating	
E	DirectionPositive	
E	DirectionNegative	

Appendix B 3.29 MC_ReadAxisInfo

If Supported	MC_ReadAxisInfo	Comments
VAR_IN_OUT		
B	Axis	
VAR_INPUT		
B	Enable	
VAR_OUTPUT		
B	Valid	
E	Busy	
B	Error	
E	ErrorID	
E	HomeAbsSwitch	
E	LimitSwitchPos	
E	LimitSwitchNeg	
E	Simulation	
E	CommunicationReady	
E	ReadyForPowerOn	
E	PowerOn	
E	IsHomed	
E	AxisWarning	

Appendix B 3.30 MC_ReadAxisError

If Supported	MC_ReadAxisError	Comments
VAR_IN_OUT		
B	Axis	
VAR_INPUT		
B	Enable	
VAR_OUTPUT		
B	Valid	
E	Busy	
B	Error	
B	ErrorID	
E	AxisErrorID	

Appendix B 3.31 MC_Reset

If Supported	MC_Reset	Sup. Y/N	Comments
VAR_IN_OUT			
B	Axis	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
VAR_OUTPUT			
B	Done	YES	
E	Busy	YES	
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.32 MC_DigitalCamSwitch

If Supported	MC_DigitalCamSwitch		Comments
VAR_IN_OUT			
B	Axis		
B	Switches		
E	Outputs		
E	TrackOptions		
VAR_INPUT			
B	Enable		
E	EnableMask		
E	ValueSource		
VAR_OUTPUT			
B	InOperation		
E	Busy		
B	Error		
E	ErrorID		

Basic elements within the array structure of MC_CAMSWITCH_REF

B/E	Parameter	Sup.Y/N	Comments
B	TrackNumber		
B	FirstOnPosition [u]		
B	LastOnPosition [u]		
E	AxisDirection		
E	CamSwitchMode		
E	Duration		

Basic elements within the array structure of MC_TRACK_REF

B/E	Parameter	Sup.Y/N	Comments
E	OnCompensation		
E	OffCompensation		
E	Hysteresis [u]		

Supplier specific implementation (MC_OutputCam, MC_CamTrack)

Appendix B 3.33 MC_TouchProbe

If Supported	MC_TouchProbe		Comments
VAR_IN_OUT			
B	Axis		
E	TriggerInput		
VAR_INPUT			
B	Execute		
E	WindowOnly		
E	FirstPosition		
E	LastPosition		
VAR_OUTPUT			
B	Done		
E	Busy		
E	CommandAborted		
B	Error		
E	ErrorID		
B	RecordedPosition		

Supplier specific implementation (MC_MeasuringInput)

Appendix B 3.34 MC_AbortTrigger

If Supported	MC_AbortTrigger		Comments
VAR_IN_OUT			
B	Axis		
E	TriggerInput		
VAR_INPUT			
B	Execute		
VAR_OUTPUT			
B	Done		
E	Busy		
B	Error		
E	ErrorID		

Supplier specific implementation (MC_AbortMeasuringInput)

Appendix B 3.35 MC_CamTableSelect

If Supported	MC_CamTableSelect		Comments
VAR_IN_OUT			
E	Master		
E	Slave		
B	CamTable		
VAR_INPUT			
B	Execute		
E	Periodic		
E	MasterAbsolute		
E	SlaveAbsolute		
E	ExecutionMode		
VAR_OUTPUT			
B	Done		
E	Busy		
B	Error		
E	ErrorID		
E	CamTableID		

Appendix B 3.36 MC_CamIn

If Supported	MC_CamIn		Comments
VAR_IN_OUT			
B	Master	YES	As VAR_INPUT
B	Slave	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
E	ContinuousUpdate		
E	MasterOffset	YES	
E	SlaveOffset	YES	
E	MasterScaling	YES	
E	SlaveScaling	YES	
E	MasterStartDistance	YES	
E	MasterSyncPosition	YES	
E	StartMode		
E	MasterValueSource		
E	CamTableID	YES	Datatype TO_Cam
E	BufferMode		
VAR_OUTPUT			
B	InSync	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	
E	EndOfProfile	YES	

Appendix B 3.37 MC_CamOut

If Supported	MC_CamOut		Comments
VAR_IN_OUT			
B	Slave		
VAR_INPUT			
B	Execute		
VAR_OUTPUT			
B	Done		
E	Busy		
B	Error		
E	ErrorID		

Appendix B 3.38 MC_GearIn

If Supported	MC_GearIn		Comments
VAR_IN_OUT			
B	Master	YES	As VAR_INPUT
B	Slave	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
E	ContinuousUpdate		
B	RatioNumerator	YES	
B	RatioDenominator	YES	
E	MasterValueSource		
E	Acceleration	YES	
E	Deceleration	YES	
E	Jerk	YES	
E	BufferMode		
VAR_OUTPUT			
B	InGear	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.39 MC_GearOut

If Supported	MC_GearOut		Comments
VAR_IN_OUT			
B	Slave		
VAR_INPUT			
B	Execute		
VAR_OUTPUT			
B	Done		
E	Busy		
B	Error		
E	ErrorID		

Appendix B 3.40 MC_GearInPos

If Supported	MC_GearInPos		Comments
VAR_IN_OUT			
B	Master	YES	As VAR_INPUT
B	Slave	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
B	RatioNumerator	YES	
B	RatioDenominator	YES	
E	MasterValueSource		
B	MasterSyncPosition	YES	
B	SlaveSyncPosition	YES	
E	SyncMode		
E	MasterStartDistance	YES	
E	Velocity	YES	
E	Acceleration	YES	
E	Deceleration	YES	
E	Jerk	YES	
E	BufferMode		
VAR_OUTPUT			
E	StartSync	YES	
B	InSync	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	

Appendix B 3.41 MC_PhasingAbsolute

If Supported	MC_PhasingAbsolute		Comments
VAR_IN_OUT			
B	Master	YES	As VAR_INPUT
B	Slave	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
B	PhaseShift	YES	
E	Velocity	YES	
E	Acceleration	YES	
E	Deceleration	YES	
E	Jerk	YES	
E	BufferMode		
VAR_OUTPUT			
B	Done	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	
E	AbsolutePhaseShift	YES	

Appendix B 3.42 MC_PhasingRelative

If Supported	MC_PhasingRelative		Comments
VAR_IN_OUT			
B	Master	YES	As VAR_INPUT
B	Slave	YES	As VAR_INPUT
VAR_INPUT			
B	Execute	YES	
B	PhaseShift	YES	
E	Velocity	YES	
E	Acceleration	YES	
E	Deceleration	YES	
E	Jerk	YES	
E	BufferMode		
VAR_OUTPUT			
B	Done	YES	
E	Busy	YES	
E	Active		
E	CommandAborted	YES	
B	Error	YES	
E	ErrorID	YES	
E	CoveredPhaseShift	YES	

Appendix B 3.43 CombineAxes

If Supported	MC_CombineAxes		Comments
VAR_IN_OUT			
B	Master1		
B	Master2		
B	Slave		
VAR_INPUT			
B	Execute		
E	ContinuousUpdate		
E	CombineMode		
E	GearRationNumeratorM1		
E	GearRatioDenominatorM1		
E	GearRatioNumeratorM2		
E	GearRatioDenominatorM2		
E	MasterValueSourceM1		
E	MasterValueSourceM2		
E	BufferMode		
VAR_OUTPUT			
B	InSync		
E	Busy		
E	Active		
E	CommandAborted		
B	Error		
E	ErrorID		

Appendix B 4. The PLCopen Motion Control Logo and Its Usage

For quick identification of compliant products, PLCopen has developed a logo for the Motion Control Function Blocks:



Figure 1: The PLCopen Motion Control Logo

This motion control logo is owned and trademarked by PLCopen.

In order to use this logo free-of-charge, the relevant company has to fulfill all the following requirements:

1. the company has to be a voting member of PLCopen;
2. the company has to comply with the existing specification, as specified by the PLCopen Task Force Motion Control, and as published by PLCopen, and of which this statement is a part;
3. this compliance application is provided in written form by the company to PLCopen, clearly stating the applicable software package and the supporting elements of all the specified tables, as specified in the document itself;
4. in case of non-fulfillment, which has to be decided by PLCopen, the company will receive a written statement concerning this from PLCopen. The company will have a one month period to either adopt their software package in such a way that it complies, represented by the issuing of a new compliance statement, or remove all reference to the specification, including the use of the logo, from all their specification, be it technical or promotional material;
5. the logo has to be used as is - meaning the full logo. It may be altered in size providing the original scale and color setting is kept.
6. the logo has to be used in the context of Motion Control.