# Motion Disarm Output Cam (MDOC)

This information applies to the CompactLogix 5370, ControlLogix 5570, Compact GuardLogix 5370, GuardLogix 5570, Compact GuardLogix 5380, CompactLogix 5380, CompactLogix 5480, ControlLogix 5580, and GuardLogix 5580 controllers. Controller differences are noted where applicable.

The Motion Disarm Output Cam (MDOC) instruction initiates the disarming of one or more Output Cams connected to the specified axis. Based on the disarm type, the MDOC instruction disarms either all Output Cams or only a specific Output Cam. The corresponding outputs maintain the last state after the disarming.

Available Languages

Ladder Diagram
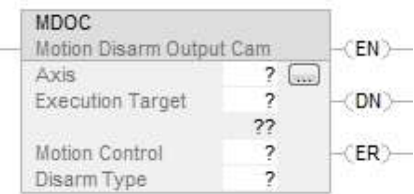
Function Block

This instruction is not available in function block.

Structured Text

MDOC(Axis, ExecutionTarget, MotionControl, DisarmType);

Operands

Ladder Diagram and Structured Text

Operand	Type **CompactLogix 5370, Compact GuardLogix 5370, Compact GuardLogix 5380, CompactLogix 5380, CompactLogix 5480**	Type **ControlLogix 5570, GuardLogix 5570, ControlLogix 5580, and GuardLogix 5580 controllers**	Format	Description
Axis	AXIS_CIP_DRIVE AXIS_VIRTUAL AXIS_CONSUMED **Tip:** AXIS_CONSUMED is supported by Compact GuardLogix 5580, CompactLogix 5380, and CompactLogix 5480 controllers only.	AXIS_CIP_DRIVE AXIS_VIRTUAL AXIS CONSUMED AXIS_SERVO AXIS_SERVO_DRIVE AXIS_GENERIC_DRIVE AXIS_GENERIC **Tip:** AXIS_GENERIC is supported by the ControlLogix 5570 and the GuardLogix 5570 controllers only.	Tag	Name of the axis that provides the position input to the Output Cam. Ellipsis launches Axis Properties dialog.

Execution Target	SINT, INT, or DINT	SINT, INT, or DINT	Immediate or Tag	The execution target defines the specific Output Cam from the set connected to the named axis. Behavior is determined by the following: 0…7 – Output Cams executed in the Logix controller. 8…31 – Reserved for future use.
Motion Control	MOTION_INSTRUCTION	MOTION_INSTRUCTION	Tag	Structure used to access instruction status parameters.
Disarm Type	UINT32	UINT32	Immediate	Selects one or all Output Cams to be disarmed for a specified axis. Select either: 0 = All – Disarms all Output Cams connected to the specified axis. 1 = Specific – Disarms the Output Cam that is connected to the specified axis and defined by the Execution Target.

Structured Text

See *Structured Text Syntax* for more information on the syntax of expressions within structured text.

For the operands that require you to select from available options, enter your selection as:

This Operand	Has These Options Which You	
	Enter as Text	Or Enter as a Number
Disarm Type	all	0
	specific	1

MOTION_INSTRUCTION Structure

Mnemonic	Description
.DN (Done) Bit 29	It is set to true when Output Cam(s) have been successfully disarmed.
.ER (Error) Bit 28	It is set to true to indicate that the instruction detected an error.

Description

The MDOC instruction disarms a specific or all output cams for a specified axis depending on the selected disarm type. The axis provides the position input to the Output Cam. The execution target defines a specific Output Cam from the set that is connected to the specified axis.

In this transitional instruction, the relay ladder, toggle the Rung-condition-in from cleared to set each time the instruction should execute.

Affects Math Status Flags

No

Major/Minor Faults

None specific to this instruction. See *Common Attributes* for operand-related faults.

Execution

Ladder Diagram

Condition/State	Action Taken
Prescan	The .EN, .DN, .ER, and .IP bits are cleared to false.
Rung-condition-in is false	The .EN bit is cleared to false if the .DN or .ER bit is set to true. Otherwise, the .EN bit is not affected. The .DN,.ER ,.IP and .PC bits are not affected.
Rung-condition-in is true	The .EN bit is set to true and the instruction executes.
Postscan	N/A

Structured Text

Condition/State	Action Taken

Prescan	See Prescan in the Ladder Diagram table.
Normal execution	See Rung-condition-in is false, followed by rung is true in the Ladder Diagram table.
Postscan	See Postscan in the Ladder Diagram table.

Error Codes

See *Motion Error Codes (.ERR)*.

Extended Error Codes

Extended Error Codes provide additional instruction specific information for the Error Codes that are generic to many instructions. Extended Error codes for the Parameter Out of Range (13) error code lists a number that refers to the number of the operand as they are listed in the faceplate from top to bottom with the first operand being counted as zero. Therefore for the MDOC instruction, an extended error code of 4 would refer to the Disarm Type operand's value. You would then have to check your value with the accepted range of values for the instruction.

Execution

If ERR is	And EXERR is	Then	Corrective Action
		Cause	
36	Varies	The size of the Output Cam array is not supported or the value of at least one member is out of range: Output bit less than 0 or greater than 31. Latch type less than 0 or greater than 3. Unlatch type less than 0 or greater than 5. Left or right position is out of cam range and the latch or unlatch type is set to "Position" or "Position and Enable". Duration less than or equal to 0 and the unlatch type is set to "Duration" or "Duration and Enable". Enable type less than 0 or greater than 3 and the latch or unlatch type is set to "Enable", "Position and Enable", or "Duration and Enable". Enable bit less than 0 or greater than 31 and the latch or unlatch type is set to "Enable", "Position and Enable", or "Duration and Enable". Latch type is set to "Inactive" and unlatch type is set to either "Duration" or "Duration and Enable".	Illegal Output Cam
37	Varies	Either the size of the Output Compensation array is not supported or the value of one of its members is out of range.	Illegal Output Compensation

> The array index associated with errors 36 and 37 are stored in .SEGMENT of the Motion Instruction data type. Only the first of multiple errors are stored. The specific error detected is stored in Extended Error Code.
>
> With the ability to dynamically modify the Output Cam table, the Illegal Output Cam error 36 may occur while the MAOC is in-process. In general, the cam elements in which an error was detected will be skipped. The following are exceptions, and will continue to be processed.
>
> Error 2, Latch Type Invalid. Latch Type defaults to Inactive.
>
> Error 3, Unlatch Type Invalid. Unlatch Type defaults to Inactive.
>
> Error 8, with Unlatch Type of Duration and Enable. Will behave as an Enable Unlatch type.

Status Bits

MDOC Effects Status Bits

The MDOC instruction affects the following status words in the Motion Axis Structure:

- OutputCamStatus
- OutputCamPendingStatus
- OutputCamLockStatus
- OutputCamTransitionStatus

Each above is a DINT with bits 0 to 7 corresponding ? to the 8 execution targets. Bit 0 is execution target 0; bit 1 is execution target 1, etc.

Example

Ladder Diagram
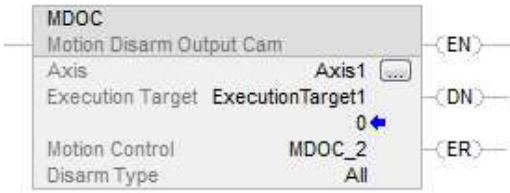
Structured Text

MDOC(Axis1, ExecutionTarget1, MDOC_2, All);

See also

[Structured Text Syntax](#)

[MDOC Flow Chart (True)](#)

[Motion Error Codes (.ERR)](#)

[Motion Event Instructions](#)

[Common Attributes](#)

     [How are we doing?](#)