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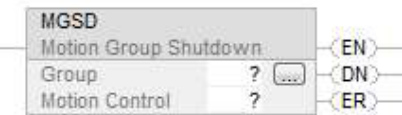
Motion Group Shutdown (MGSD)

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.

Use the Motion Group Shutdown (MGSD) instruction to force all axes in the designated group into a Shutdown state. The Shutdown state of an axis is Servo Off, drive output is deactivated, and the motion module’s OK solid-state relay contacts, if applicable, are opened. The group of axes remains in the Shutdown state until either Group Shutdown Reset is executed or each axis is individually reset via the Motion Axis Shutdown (MASD) instruction.

Available Languages

Ladder Diagram



Function Block

This instruction is not available in function block.

Structured Text

MGSD(Group,MotionControl);

Operands

Ladder Diagram

Operand	Type	Format	Description
Group	MOTION_GROUP	Tag	Name of the group of axes to perform operation on
Motion Control	MOTION_INSTRUCTION	Tag	Structure used to access instruction status parameters.

Structured Text

Operand	Type	Format	Description
Group	MOTION_GROUP	Tag	Name of the group of axes to perform operation on
Motion Control	MOTION_INSTRUCTION	Tag	Structure used to access instruction status parameters.

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

MOTION_INSTRUCTION Structure

Mnemonic	Description
.EN (Enable) Bit	The enable bit indicates when the instruction is enabled. It remains set until servo messaging completes and Rung-condition-in goes false.

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.DN (Done) Bit 29	The done bit indicates when the instruction sets the group of axes to the shutdown operating state.
.ER (Error) Bit 28	The error bit indicates when the instruction detects an error, such as if messaging to the servo module failed.

Description

The MGSD instruction turns drive output off, disables the servo loops of all axes in the specified group, and opens any associated OK contacts for all applicable motion modules in the group. This action places all group axes into the Shutdown state. The MGSD instruction takes only one parameter; simply select or enter the desired group to shutdown.

Another action initiated by the MGSD instruction is the clearing of all motion processes in progress and a clearing of all the motion status bits. Associated with this action, the command also clears all motion instruction .IP bits that may currently be set for each axis in the group.

The MGSD instruction forces the targeted group of axes into the Shutdown state. One of the unique characteristics of the Shutdown state is that the OK solid state relay contact for all of the group’s motion modules Open. This feature can be used to open up the E-Stop string(s) that control main power to the various drive systems.

Another characteristic of the Shutdown state is that any instruction that initiates axis motion for an axis within the group is blocked from execution. Attempts to do so results in an execution error. Only by executing one of the Shutdown Reset instructions can motion then be successfully initiated.

To successfully execute a MGSD instruction, the targeted group must be created and configured.

Important:

The instruction execution may take multiple scans to execute because it requires multiple coarse updates to complete the request. The Done (.DN) bit is not set immediately, but only after the request is completed.

Additionally, the MGSD instruction supports canceling the Motion Drive Start (MDS) instruction. This includes clearing the MDS In Process (.IP) bit, and clearing the DirectVelocityControlStatus bit and the DirectTorqueControlStatus bit in the Motion Status attribute.

This is a transitional instruction:

- In relay ladder, toggle Rung-condition-in from false to true each time the instruction should execute.
- In structured text, condition the instruction so that it only executes on a transition.

Master Driven Speed Control (MDSC) and the MGSD Instruction

When the group shuts down:

- The IP bit of the Master Driven Axis Control (MDAC) and Master Driven Coordinate Control (MDCC) instructions reset as the group is shutdown.
- The AC bit of the MDAC and MDCC instructions are reset when the axis is stopped as the group is shutdown.
- The MGS instruction clears the pending Master Axis for all future single and coordinated motion instructions.

Affects Math Status Flags

Instructions

- ▷ [Motion Event Instructions](#)
- ▲ [Motion Group Instructions](#)
 - [Motion Group Shutdown \(MGSD\)](#)
 - [MGSD Flow Chart \(True\)](#)
 - [Motion Group Shutdown Reset \(MGSR\)](#)
 - [MGSR Flow Chart \(True\)](#)
 - [Motion Group Stop \(MGS\)](#)
 - [MGS Flow Chart \(True\)](#)
 - [Motion Group Strobe Position \(MGSP\)](#)
 - [MGSP Flow Chart \(True\)](#)
- ▷ [Motion Move Instructions](#)
- ▷ [Motion State Instructions](#)
- ▷ [Multi-Axis Coordinated Motion Instructions](#)
- ▷ [Logical and Move Instructions](#)
- ▷ [Program Control Instructions](#)
- ▷ [Sequencer Instructions](#)
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- ▷ [Select/Limit Instructions](#)
- ▷ [Sequential Function Chart \(SFC\) Instructions](#)
- ▷ [Statistical Instructions](#)
- ▷ [Safety Instructions](#)
- ▷ [Studio 5000 Logix Designer Glossary](#)

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 either the .DN or .ER bit is true.
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) for Motion Instructions.

Extended Error Codes

Extended Error Codes provide additional instruction specific information for the Error Codes that are generic to many instructions. See Motion Error Codes (ERR) for Motion Instructions.

Status Bits

MGSD Changes to Single Axis Status Bits

Bit Name	State	Meaning
ServoActionStatus	FALSE	Axis is in Servo Off state with the servo loop inactive.
DriveEnableStatus	FALSE	Axis Drive Enable output is inactive.
ShutdownStatus	TRUE	Axis is in Shutdown state.
AccelStatus	FALSE	Axis is not Accelerating.
DecelStatus	FALSE	Axis is not Deceleratin.

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GearingLockStatus	FALSE	Axis is not locked.
JogStatus	FALSE	Axis is not Jogging.
MoveStatus	FALSE	Axis is not Moving.
GearingStatus	FALSE	Axis is not Gearing.
HomingStatus	FALSE	Axis is not Homing
DirectVelocityControlStatus	FALSE	Axis is not under Direct Velocity Control.
DirectTorqueControlStatus	FALSE	Axis is not under Direct Torque Control.

Example

When the input conditions are true, the controller forces all axes in group1 into a shutdown operating state.

Ladder Diagram



Structured Text

```
MGSD(Motion,MGSD_2);
```

See also

[Motion Drive Start \(MDS\)](#)

[Motion Drive Start \(MDS\)](#)

[Structured Text Syntax](#)

[Common Attributes](#)

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