Host Command Reference

Q and SCL commands for servo and stepper drives

Includes RS-232, RS-485,
Ethernet UDP, Ethernet TCP/IP, EtherNet/IP,
Modbus RTU and Modbus TCP/IP

Applied Motion Products
A MOONS' COMPANY

APPLIED MOTION PRODUCTS

920-0002 Rev. W
7/6/2021

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JC - Velocity (Oscillator) mode second speed

Compatibility: Stepper drives and SV servo drives
Affects: Analog velocity mode
See also: AD, AG, CM commands

Sets or requests the second speed used in velocity (oscillator) mode. This only applies to Command Modes (CM) 13, 14, 17, and 18.

SV, STAC6, ST-Q/Si

Input X5 is used to select the speed set by the JC command while in Command Mode 13, 14, 17 or 18.

ST-S, STM

The EN input is used to select the speed set by the JC command while in Command Mode 13, 14, 17 or 18.

Command Details:

Structure	JC{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Analog velocity mode second speed
- units	rev/sec
- range	BLu, SV, STAC6, ST-Q/Si, ST-S: 0.0042 - 133.3333 (resolution is 0.0042) STM: 0.0042 - 80.0000 (resolution is 0.0042)

Examples:

Command	Drive sends	Notes
JC11	-	Set second jog speed in analog velocity mode to 11 rps
JC	JC=11	

JC - 8 Jog Velocities (SV200 drives)

Compatibility: SV200 drives
Affects: Control mode 15,16,17,18

Sets or requests the speed used in velocity mode. This only applies to control modes 15, 16, 17, and 18. The command has two parameters: the first parameter selects the velocity number (1-8); the second parameter sets the velocity value of the selected velocity number. See *SVX Servo Suite* software.

Command Details:

Structure	JC{Parameter #1}{Parameter #2}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	NO

Parameter Details:

Parameter #1	The velocity number
- units	integer number
- range	1~8
Parameter #2	Jog velocity
- units	rps
- range	1~136

Examples:

Command	Drive sends	Notes
JC110	%	Set the first jog velocity to 10rps
JC1	JC1 =10	The first jog velocity is 10rps

JD - Jog Disable

Compatibility: All drives
Affects: Jogging during a WI command
See also: JA, JE, JS, WI commands

Disables jog inputs (which are active during a WI instruction if previously enabled by the JE command). Jog accel/decel and velocity are set using the JA and JS commands, respectively.

Command Details:

Structure	JD
Type	BUFFERED
Usage	WRITE ONLY
Non-Volatile	NO
Register Access	None

Examples:

Command	Drive sends	Notes
JD	-	Disable jog inputs while executing the WI command

JE - Jog Enable

Compatibility: All drives
Affects: WI (jogging) command
See also: JA, JD, JS, WI commands

Enables jog inputs during a WI instruction. Jog accel, decel and velocity are set using the JA, JD and JS commands, respectively.

BLu, STAC6-S, SE, Q, QE

Inputs X1 and X2 are the designated jog inputs during a WI instruction.

BLu, STAC6-Si

Inputs 5 and 6 of IN/OUT2 or top board (screw terminal) connector are the designated jog inputs during a WI instruction.

SV, ST-Q/Si

Inputs X5 and X6 are the designated jog inputs during a WI instruction.

ST-S, STM

The STEP and DIR inputs are the designated jog inputs during a WI instruction. The STEP and DIR inputs can each be assigned to only one function in an application. If you want to use the STEP and DIR inputs as jog inputs you can define them as such with the JE command. JE takes no effect if the drive is set in Command Mode (CM) 7, 11, 12, 13, 14, 15, 16, 17 or 18, because these modes predefine these inputs and take precedence over the JE command. Also, setting the DL command (to 1 or 2) after setting the JE command reassigns the STEP and DIR inputs as end-of-travel limit inputs and turns off jogging functionality. In other words, the JE and DL commands, as well as Command Modes (CM) 7, 11, 12, 13, 14, 15, 16, 17 and 18 each assign a usage to the STEP and DIR inputs. Each of these must exclusively use the STEP and DIR inputs. Command Modes are most dominant and will continually prevent JE and DL from using the inputs. JE and DL exclude each other by overwriting the usage of the STEP and DIR inputs. To enable jogging with the STEP and DIR inputs simply execute the JE command with CM=21 or CM=22.

Command Details:

Structure	JE
Type	BUFFERED
Usage	WRITE ONLY
Non-Volatile	NO
Register Access	None

Examples:

Command	Drive sends	Notes
JE	-	Enable jog inputs while executing the WI command
WIX4L	-	Wait for input X4 to close. While waiting jog inputs are active, which means the motor can be jogged in the CW and CCW directions by closing the jog inputs. After input X4 closes the jog function stops, at least until the next WI command executes.

JL - Jog Decel

Compatibility: All drives
Affects: Jogging during WI command, velocity (oscillator) modes, and CJ command
See also: JA command

Sets or requests the decel rate for Jog moves and velocity (oscillator) modes in rev/sec/sec. The JL value cannot be changed while jogging. To maintain compatibility with legacy products, JA sets both the JA and JL values, so when a different JL value is required set JA first, then set JL.

Command Details:

Structure	JL{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Jog deceleration rate
- units	rev/sec/sec (rps/s)
- range	0.167 - 5461.167 rps/s (resolution is 0.167 rps/s)

Examples:

Command	Drive sends	Notes
JL25	-	Sets jog deceleration rate to 25 rps/s
JL	JL=25	

JM - Jog Mode

Compatibility: All drives*, see below
Affects: CJ command, and jogging during a WI command
See also: CJ, JE, WI commands

Sets or requests the Jog mode. There are two Jog modes available:

*Stepper drives only utilize Jog Mode 1 (JM1), and therefore will ignore attempts to set JM2.

Jog Mode 1: Servo and stepper drives
For servo drives, Jog Mode 1 uses a “position-type” of servo control that moves the target position which causes the servo to move at the set velocity. Jog Mode 1 will cause the servo motor to always move the same distance over time. A drawback is that the servo can fault if the position error during the move exceeds the value set by the PF (Position Fault) command. For stepper drives, Jog Mode 1 causes the step motor to run at the set velocity (see JS and CS commands).

Jog Mode 2: Servo drives only
For servo drives only, Jog Mode 2 uses a “velocity-type” of servo control that applies torque to the motor to maintain velocity. This method functions better with high inertia loads because it ignores the value set by the PF (Position Fault) command. It also allows the drive to function in a “torque-limited velocity” mode or a “velocity-limited torque” mode. Jog Mode 2 also uses a different set of control parameters, VI and VP, for “tuning” the velocity mode. See VI & VP commands later in this guide.

Command Details:

Structure	JM{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Jog mode
- units	integer
- range	1 = position-type 2 = velocity-type

Examples:

Command	Drive sends	Notes
JM1	-	Put drive into position-type servo control when jogging
JM2	-	Put drive into velocity-type servo control when jogging
JM	JM=2	

JS - Jog Speed

Compatibility: All drives
Affects: Jogging during WI command, velocity (oscillator) modes, and CJ command
See also: CJ, CS, JA commands

Sets or requests the speed for Jog moves in rev/sec. Sending JS with no parameter causes drive to respond with present jog speed.

Command Details:

Structure	JS{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	"J" (026) Note: The JS command uses different units than the "J" register. See Data Registers section for details.

Parameter Details:

Parameter #1	Move velocity
- units	rev/sec
- range	BLu, SV, STAC6, ST-Q/Si, ST-S: 0.0042 - 133.3333 (resolution is 0.0042) STM: 0.0042 - 80.0000 (resolution is 0.0042)

Examples:

Command	Drive sends	Notes
JS10.35	-	Set jog speed to 10.35 rps
JS	JS=10.35	

KC - Overall Servo Filter

Compatibility: Servo drives only
Affects: Servo tuning and performance

Sets or requests the servo control overall filter frequency. The filter is a simple one-pole, low-pass filter intended for attenuating high frequency oscillations. The value is a constant that must be calculated from the desired roll off frequency. See equation below.

NOTE: It is recommended to use the Quick Tuner *software for tuning and configuring your servo system.*

C = 72090 / (1400/F + 2.2)
where C = Filter Value, F = desired filter Frequency in Hz

Command Details:

Structure	KC{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Filter Value
- units	integer
- range	0 - 32767 (see above for calculations)

Examples:

Command	Drive sends	Notes
KC7836	-	Set servo filter to 200 Hz
KC	KC=7836	

KD - Differential Constant

Compatibility: Servo drives only
Affects: Servo tuning and performance

Sets or requests the servo control differential gain. Gain value is relative: “0” meaning no gain, “32767” meaning full gain. KD is part of the Damping servo parameters in *Quick Tuner*. It works to damp low speed oscillations.

NOTE: It is recommended to use the Quick Tuner *software for tuning and configuring your servo system.*

Command Details:

Structure	KD{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Differential Gain value
- units	integer
- range	0 - 32767 (0 = 0%, 32767 = 100%)

Examples:

Command	Drive sends	Notes
KD2000	-	Set differential gain to 2000
KD	KD=2000	

KE - Differential Filter

Compatibility: Servo drives only
Affects: Servo tuning and performance

Sets or requests the differential control parameter filter frequency. The filter is a simple one-pole, low-pass filter intended for attenuating high frequency oscillations. The value is a constant that must be calculated from the desired roll off frequency. See equation below.

C = 72090 / (1400/F + 2.2)
where C = Filter Value, K = desired filter Frequency in Hz

NOTE: It is recommended to use the Quick Tuner *software for tuning and configuring your servo system.*

Command Details:

Structure	KE{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Filter Value
- units	integer
- range	0 - 32767

Examples:

Command	Drive sends	Notes
KE7836	-	Set differential filter to 200 Hz

KF - Velocity Feedforward Constant

Compatibility: Servo drives only
Affects: Servo tuning and performance

Sets or requests the servo control velocity feedforward gain. Gain value is relative: “0” meaning no gain, “32767” meaning full gain. KF is part of the Damping servo parameters in *Quick Tuner*. It counters the effects of the KV parameter which can cause large following error. KF is usually the same value as KV.

NOTE: It is recommended to use the Quick Tuner *software for tuning and configuring your servo system.*

Command Details:

Structure	KF{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Velocity feedforward gain value
- units	integer
- range	0 - 32767 (0 = 0%, 32767 = 100%)

Examples:

Command	Drive sends	Notes
KF4000	-	Set velocity feedforward gain to 4000
KF	KF=4000	

KG – Secondary Global Gain

Compatibility: SV200 series servo drives only
Affects: Servo tuning and performance
See also: KP, GG commands

Sets or requests the secondary global gain of PID controller. This is the proportional gain in the position loop and an alternate to KP. See GG command (and SVX Servo Suite software for details on switching between KP and KG with the X7 digital input.

Command Details:

Structure	KG{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	NO

Parameter Details:

Parameter #1	Global gain
- units	integer number
- range	0~32767

Examples:

Command	Drive sends	Notes
KG10000	%	Set the secondary global gain to 10000
KG	KG =10000	The secondary global gain is 10000

KI - Integrator Constant

Compatibility: Servo drives only
Affects: Servo tuning and performance

Sets or requests the servo control integrator gain term. Gain value is relative: “0” meaning no gain, “32767” meaning full gain. KI is part of the Stiffness servo parameters in *Quick Tuner*. It minimizes (or may even eliminate) position errors especially when holding position.

NOTE: It is recommended to use the Quick Tuner *software for tuning and configuring your servo system.*

Command Details:

Structure	KI{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Integrator gain value
- units	integer
- range	0 - 32767 (0 = 0%, 32767 = 100%)

Examples:

Command	Drive sends	Notes
KI5000	-	Set integrator gain to 500
KI	KI=500	

KJ - Jerk Filter Frequency

Compatibility: SV200 series, SV7 and SVAC3 Servo drives only
Affects: S-Curve

Sets or requests the Jerk Filter frequency, in Hz. The parameter is set within *SVX Servo Suite* for SV200 drives and *Quick Tuner*. for SV7 and SVAC3 drives; it can also be set with the SCL command KJ. The lower the frequency value the more pronounced the S-curve profile will be. Setting the value to 0 will disable the filter.

S-curve acceleration/deceleration ramps are beneficial in positioning systems where instantaneous changes in speed may cause the load to jerk excessively. One example is when the load is connected to the motion actuator via a long moment arm. If the arm is not sufficiently rigid, changes in speed at the actuator can result in undesirable oscillations and increased settling time at the load. Smoothed transitions in speed changes, such as those provided by the jerk filter can alleviate this unwanted motion and reduce settling time.

NOTE: It is recommended to use the software for tuning and configuring your servo system.

Command Details:

Structure	KJ{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Jerk Filter Frequency (Hz)
- units	integer
- range	0 - 5000 (0 = disabled)

Examples:

Command	Drive sends	Notes
KJ500	-	Set jerk filter frequency to 500Hz
KJ	KJ=500	

KK - Inertia Feedforward Constant

Compatibility: Servo drives only
Affects: Servo tuning and performance

Sets or requests the servo control inertia feedforward gain. Gain value is relative: “0” meaning no gain, “32767” meaning full gain. KK is an Inertia servo parameter in *Quick Tuner*. KK improves acceleration control by compensating for the load inertia.

NOTE: It is recommended to use the Quick Tuner *software for tuning and configuring your servo system.*

Command Details:

Structure	KK{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Inertia feedforward gain value
- units	integer
- range	0 - 32767 (0 = 0%, 32767 = 100%)

Examples:

Command	Drive sends	Notes
KK500	-	Set inertia feedforward gain to 500
KK	KK=500	

KP - Proportional Constant

Compatibility: Servo drives only
Affects: Servo tuning and performance

Sets or requests the servo control proportional gain term. Gain value is relative: “0” meaning no gain, “32767” meaning full gain. KP is part of the Stiffness servo parameters in *Quick Tuner*. This parameter is the primary gain term for minimizing the position error.

NOTE: It is recommended to use the Quick Tuner *software for tuning and configuring your servo system.*

Command Details:

Structure	KP{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Proportional gain value
- units	integer
- range	0 - 32767 (0 = 0%, 32767 = 100%)

Examples:

Command	Drive sends	Notes
KP5000	-	Set proportional gain to 5000
KP	KP=5000	

KV - Velocity Feedback Constant

Compatibility: Servo drives only
Affects: Servo tuning and performance

Sets or requests the servo control velocity feedback gain term. Gain value is relative: “0” meaning no gain, “32767” meaning full gain. KV is part of the Damping servo parameters in *Quick Tuner*. It aids the KD command in damping system oscillation. This term helps to control larger inertial loads.

NOTE: The Velocity Feedback (KV) and Velocity Feedforward (KF) constants are typically set to similar values. The Feedforward value may at times be set larger depending on the frictional content of the motor load.

NOTE: It is recommended to use the Quick Tuner *software for tuning and configuring your servo system.*

Command Details:

Structure	KV{Paramter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Velocity feedback gain value
- units	integer
- range	0 - 32767 (0 = 0%, 32767 = 100%)

Examples:

Command	Drive sends	Notes
KV4000	-	Set velocity feedback gain to 4000
KV	KV=4000	

LA - Lead Angle Max Value

Compatibility: Stepper drives (except STM)
See also: EF, LS commands

Returns the maximum lead angle setting for use in the Stall Prevention algorithm (see EF command for details). This value is reached at the speed set by the LS command.

Lead Angle is the angular measurement between the internal magnetic field and the motor's rotor. If the lead angle is too large, the magnetic attraction fades and the motor will stall. Too small of a value makes inefficient use of the magnetic attraction and the motor will not produce its maximum torque.

Lead angle directly affects the magnetic forces acting on the rotor, and is thus directly related to the motor's torque. An ideal setting for Lead Angle is essential for maximizing the motor's torque output. During motion, the motor's lead angle is constantly monitored and adjusted to keep it within a speed-dependent operational range and allow the drive to maintain control of the motor even in the event of a disturbance. The maximum lead angle (set by LA) is reached at the Lead Angle Speed specified by LS.

This value is measured in *electrical degrees*. There are four physical motor steps (4 * 1.8 degrees = 7.2 degrees) per 360 degree electrical cycle.

The relationship between electrical degrees and motor rotational displacement is given as follows:

360 electrical degrees / 7.2 rotational degrees
50 electrical degrees / rotational degree

Alternatively, in terms of physical displacement,

1 rotational degree / 50 electrical degrees
0.02 rotational degrees / electrical degree

The maximum effective setting for LA is 180 electrical degrees. If at any point the motor's lead angle exceeds this value, a stall condition will occur.

NOTE: While it is worthwhile to understand the meaning of the Lead Angle setting, it is intended that the ST Configurator software be used to configure this setting.

Command Details:

Structure	LA{Parameter #1}
Type	BUFFERED
Usage	READ / WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Lead Angle Value
- units	integer
- range	1 - 180 electrical degrees

Examples:

Command	Drive sends	Notes
LA120	-	Set the target lead angle setting to 120 electrical degrees (default, optimal for most motors)
LA	LA=120	

LM - Software Limit CCW

Compatibility: SSM, TSM, TXM, SS, SSAC and SV200 series servo drives
See also: SP and AM commands

Sets or requests software CCW limit values.

Motor decelerates to stop when the absolute position (can be requested or set by SP command) decreases to software CCW limit value, Software limit does not work in CCW direction when software CCW limit parameter is set to zero. This parameter is volatile and the default value will be zero upon power-up.

Command Details:

Structure	LM{Parameter #1}
Type	BUFFERED
Usage	READ / WRITE
Non-Volatile	NO
Register Access	NO

Parameter Details:

Parameter #1	Software Limit Value
- units	Absolute position
- range	+/- 2,147,483,647

Examples:

Command	Drive sends	Notes
LM10000	%	Set software CCW limit value to 10000 counts.
LM	LM =10000	Request software CCW limit value.
LM0	%	Turn off software limit function in CCW direction.

LP - Software Limit CW

Compatibility: SSM, TSM, TXM, SS, SSAC and SV200 series servo drives
See also: SP and AM commands

Sets or requests software CW limit values.

Motor decelerates to stop when the absolute position (can be requested or set by SP command) increases to software CW limit value. Software limit does not work in CW direction when software CW limit parameter is set to zero. This parameter is volatile and the default value is zero when power-up.

Command Details:

Structure	LP{Parameter #1}
Type	BUFFERED
Usage	READ / WRITE
Non-Volatile	NO
Register Access	NO

Parameter Details:

Parameter #1	Software Limit Value
- units	Absolute position
- range	+/- 2,147,483,647

Examples:

Command	Drive sends	Notes
LP10000	%	Set software CW limit value to 10000 counts.
LP	LP =10000	Request software CW limit value.
LP0	%	Turn off software limit function in CW direction

LS - Lead Angle Speed

Compatibility: Stepper drives (except STM)
See also: EF, LA commands

Specifies the speed at which the Lead Angle specified by the LA command will be applied. (See LA command for a detailed description of the Lead Angle concept.)

During operation, the lead angle is continuously monitored and is dynamically adjusted to maintain maximum torque output. The optimal setting is dependent upon motor speed, with the maximum setting occurring at the speed specified by LS.

NOTE: While it is worthwhile to understand the meaning of the Lead Angle Speed setting, it is intended that the ST Configurator software be used to configure this setting.

Command Details:

Structure	LS{Parameter #1}
Type	BUFFERED
Usage	READ / WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Lead Angle Speed
- units	integer
- range	1 - 80 rev/sec

Examples:

Command	Drive sends	Notes
LS25	-	Use maximum lead angle setting (LA) at 25 rps
LS	LS=25	

LV - Low Voltage threshold

Compatibility: All drives
Affects: Under voltage alarm and fault

Sets or requests the low voltage threshold for under voltage alarm / fault conditions. In AC drives (e.g. BLuAC5 and STAC6) an under voltage condition causes a Drive Fault, which disables the motor outputs of the drive. In DC drives (SV, ST, and STM) an under voltage condition causes an Alarm. If desired, the user can change the low voltage threshold of the drive, however in most applications it is neither necessary nor recommended. The factory default for low voltage threshold is set to both protect the drive from damage and work with the widest range of supply voltages possible.

Command Details:

Structure	LV{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Low voltage threshold
- units	All drives except BLuAC5: 0.1 volts DC BLuAC5: 1 volt DC
- range	BLuDC: 18 to 40 BLuAC: 90 to 300 STAC6: 90 to 160 ST5: 12 to 75 ST10: 12 to 75 SV7: 12 to 75 STM: 10 to 75

Examples:

Command	Drive sends	Notes
LV	LV=180	Low voltage threshold of ST5 set at 18 VDC
LV200	-	Set low voltage threshold of ST5 drive to 20 VDC
LV	LV=900	Low voltage threshold of STAC6 set at 90 VDC (bus voltage)
LV	LV=90	Low voltage threshold of BLuAC5 set at 90 VDC (bus voltage)

MC - Motor Current, Rated

Compatibility: Stepper drives (except STM)
See also: CC, PN commands

Specifies the maximum current that can be sent to the motor. This is the same value set in ST Configurator's Custom Motor screen for Rated Current.

This value serves as the upper ceiling for the CC command, preventing excessive current from being sent to the motor, potentially damaging it. It is also used when the motor is probed to determine its electrical characteristics (see PN command for details).

Command Details:

Structure	MC{Parameter #1}
Type	BUFFERED
Usage	READ / WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Motor Rated Current
- units	amps
- range	0 - 6.00 amps (STAC6 only) 0 - 10.00 amps (ST-S, ST-Q/Si)

Examples:

Command	Drive sends	Notes
MC2.5	-	Motor maximum current set to 2.5A.
MC	MC=2.5	

MD - Motor Disable

Compatibility: All drives
See also: BE, BO, ME commands

Disables motor outputs (reduces motor current to zero). Disabling the motor also activates the Brake Output function (see BO command). Motor current is not reduced to zero until the Brake Engage (BE command) time has expired.

Command Details:

Structure	MD
Type	BUFFERED
Usage	WRITE ONLY
Non-Volatile	No
Register Access	None

Examples:

Command	Drive sends	Notes
MD	-	Drive turns off current to the motor

ME - Motor Enable

Compatibility: All drives
See also: BD, BO, MD commands

Restores drive current to motor. If the drive cannot be enabled due to the Enable Input (SI) state, the drive will respond with a “&” which indicates that the drive could not be enabled. Enabling the drive also deactivates the Brake Output function (see BO command). Enabling of the motor is delayed by the BD (Brake Disengage) time delay.

WARNING: This command restores the previous mode of operation. If for example the drive is operating in Analog Velocity mode the motor may immediately start moving. External inputs to the drive must be sequenced properly to avoid unpredictable operation.

Command Details:

Structure	ME
Type	BUFFERED
Usage	WRITE ONLY
Non-Volatile	NO
Register Access	None

Examples:

Command	Drive sends	Notes
ME	-	Drive is enabled
ME	&	Drive is NOT enabled: check Servo Enable input (SI) for proper state

MN - Model Number

Compatibility: BLu series servo drives, ST, STAC6, some STM, and some legacy step drive models

NOTE: This command is deprecated. Please use MV to query the drive for model and revision information.

Requests the drive's Model Number. Drive returns a single character that is a code for the model number.

Unlike most other commands that request data back from the drive, where the drive will send the original Command Code followed by an "=" and then a value, when the MN command is sent to a drive the drive only responds with the single character code. (See below).

Command Details:

Structure	MN
Type	IMMEDIATE
Usage	READ ONLY
Non-Volatile	NO
Register Access	None
Units	character code (see below)

Response Details:

Model Number	Character code	Model Number	Character Code
BLuDC4-S*	O	STAC6-220-S	\
BLuDC4-SE*	o	STAC6-220-SE	|
BLuDC4-Si*	P	STAC6-220-Q	]
BLuDC4-Q*	W	STAC6-220-QE	}
BLuDC4-QE*	w	STAC6-220-Si	^
BLuDC9-S*	R	ST5-S	D
BLuDC9-SE*	r	ST10-S	E
BLuDC9-Si*	S	ST5-Plus	J
BLuDC9-Q*	X	ST10-Plus	K
BLuDC9-QE*	x	ST5-Q	F
BLuAC5-S	T	ST10-Q	H
BLuAC5-SE	t	ST5-Si	G
BLuAC5-Q	U	ST10-Si	I
BLuAC5-QE	u	STM23S-xxx	a
BLuAC5-Si	V	STM23Q-xxx	b
STAC6-S	Y	SV7-S	;
STAC6-SE	y	SV7-Q	<
STAC6-Q	Z	SV7-Si	=
STAC6-QE	z		
STAC6-Si	[		

* BLu100 and BLu200 series drives have been replaced by BLuDC4 and BLuDC9 series drives, respectively. BLu100 and BLu200 drives are still supported, but part numbers have been changed.

Examples:

Command	Drive sends	Notes
MN	T	Connected drive is a BLuAC5-S

MO - Motion Output

Compatibility: All drives
See also: AO, BO, PL, SD and TO commands

Defines the drive's Motion Output digital output function.

For all stepper drives there are 8 states available:

MO1: Output is closed (energized) when motor is not moving.
MO2: Output is open (de-energized) when motor is not moving.
MO3: Output is not used as a Motion Output and can be used for another automatic output function or as a general purpose output.
MO4: Output is used as a Tach Output at 100 pulses/rev with 1.8 degree step motor.
MO5: Output is used as a Tach Output at 200 pulses/rev with 1.8 degree step motor.
MO6: Output is used as a Tach Output at 400 pulses/rev with 1.8 degree step motor.
MO7: Output is used as a Tach Output at 800 pulses/rev with 1.8 degree step motor.
MO8: Output is used as a Tach Output at 1600 pulses/rev with 1.8 degree step motor.

For SV200 servo drives, this command is designed to control 4 outputs (Y3,Y4,Y5,Y6) using 2 parameters (MO{Param#1}{Param#2}). For details, refer to the SV200 Hardware Manual and SVX Servo Suite software.

For SV servo drives (SV7 and SVAC3) there are 10 states available:

MO1: Output is closed (energized) when motor is not moving.
MO2: Output is open (de-energized) when motor is not moving.
MO3: Output is not used as a Motion Output and can be used for another automatic output function or as a general purpose output.
MO4: Output is used as a Tach Output at 64 pulses/rev with 8 pole motor (8 times number of poles)
MO5: Output is used as a Tach Output at 128 pulses/rev with 8 pole motor (16 times number of poles)
MO6: Output is used as a Tach Output at 256 pulses/rev with 8 pole motor (32 times number of poles)
MO7: Output is used as a Tach Output at 512 pulses/rev with 8 pole motor (64 times number of poles)
MO8: Output is used as a Tach Output at 1024 pulses/rev with 8 pole motor (128 times number of poles)
MO9: Output is closed when in position based on encoder error
MO10: Output is open when in position based on encoder error

For SSM and TXM-S/Q/IP there are 11 states available:

MO1: Output is open (de-energized) when static position error is less than set value.
MO2: Output is closed (energized) when static position error is less than set value.
MO3: Output is not used as a Motion Output and can be used for another automatic output function or as a general purpose output.
MO4: Output is used as a Tach Output at 100 pulses/rev.
MO5: Output is used as a Tach Output at 200 pulses/rev.
MO6: Output is used as a Tach Output at 400 pulses/rev.
MO7: Output is used as a Tach Output at 800 pulses/rev.
MO8: Output is used as a Tach Output at 1600 pulses/rev.
MO9: Output is closed (energized) when dynamic position error is less than set value.
MO10: Output is open (de-energized) when dynamic position error is less than set value.
MO11: Output is used as a Tach Output at 50 pulses/rev.

For TSM there are 3 states available to control the Y2 output:

MO3: Output is not used as a Motion Output and can be used for another automatic output function or as a general purpose output.

MO9: Output is closed (energized) when dynamic position error is less than set value.
MO10: Output is open (de-energized) when dynamic position error is less than set value.

NOTE: for other Motion Output settings such as static in-position and tach output for TSM products, please refer to TO command

BLu, SV, STAC6, ST-Q/Si, STAC5-S, SVAC3-S
Output Y2 is the designated Motion Output.

STAC5-Q/IP and SVAC3-Q/IP
Output OUT1 is the designated Motion Output.

ST-S, STM17-S/Q/C, STM23-Q/C, STM24-C
The one output of these drives (OUT) can be assigned to one of the five available functions: alarm output, brake output, motion output, tach output, or general purpose output. Each of these functions must exclusively use the output, so only one function is allowed. There are two ways to define the function of this output: via the *ST Configurator* software or via the MO command.

STF, TSM34, TXM34, SV200
On these products, any output can be used as the motion output. MO must be followed by two numerals. The first one specifies which output is used. The second numeral specifies the function.

STM24-SF/QF
Drives with Flex I/O allow a second parameter which allows the user to specify the I/O point used. Before an I/O point can be used as a Motion Output it must first be configured as an output with the SD command.

Possible uses for the MO command on the STM24 are as follows ('n' denotes the I/O point to be used):

MO1n: Output is closed (active, low) when the motor is moving.
MO2n: Output is open (inactive, high) when the motor is moving.
MO3n: Output is not used as a Motion Output and can be used for another automatic output function or as a general purpose output.
MO4n: Output is used as a Tach Output at 100 pulses/rev with 1.8 degree step motor.
MO5n: Output is used as a Tach Output at 200 pulses/rev with 1.8 degree step motor.
MO6n: Output is used as a Tach Output at 400 pulses/rev with 1.8 degree step motor.
MO7n: Output is used as a Tach Output at 800 pulses/rev with 1.8 degree step motor.
MO8n: Output is used as a Tach Output at 1600 pulses/rev with 1.8 degree step motor.

NOTE: Setting the MO command to 1, 2, or 4 - 8 overrides previous assignments of this output's function. Similarly, if you use the AO or BO command to set the function of the output after setting the MO command to 1 or 2, usage of the output will be reassigned and AO will be automatically set to 3.

Command Details:

Structure	MO{Parameter #1}{Parameter #2 (Flex I/O only)}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Output Usage (see above)
- units	integer code
- range	1, 2 or 3
Parameter #2 (Flex I/O only)	I/O Point (if applicable, see note below)
- units	integer code
- range	1 - 4

NOTES:
• The SD command must be executed to set an I/O point as an output before that output can be designated as the Motion Output.
• Parameter #2 only applies to drives equipped with Flex I/O. This includes the STM24-S and -Q. Parameter #2 is not defined for drives equipped with standard I/O.

Examples:

All drives with standard I/O:

Command	Drive sends	Notes
MO1	-	Motion Output will close when the motor is not moing
MO	MO=1	

Drives with Flex I/O only:

Command	Drive sends	Notes
SD4O	-	Configures I/O 4 as output (see SD command for details)
MO14	-	Motion Output is mapped to output #4, and will close when the motor is not moving
MO	MO=14	

STM24-S, -Q only

Command	Drive sends	Notes
MO14	-	I/O point 4 will be closed when motor is not moving
MO	MO=14	

NOTE: When working with digital inputs and outputs it is important to remember the designations low and high. If current is flowing into or out of an input or output, i.e. the circuit is energized, the logic state for that input/output is defined as low or closed. If no current is flowing, i.e. the circuit is de-energized, or the input/output is not connected, the logic state is high or open. A low state is represented by the "L" character in parameters of commands that affect inputs/outputs. For example, WI3L means "wait for input 3 low", and SO1L means "set output 1 low". A high state is represented by the "H" character.

MR - Microstep Resolution

Compatibility: All Stepper Drives
Affects: Microstep Resolution
See also: EG command

The MR command allows the user to set or request the Microstep Resolution of the drive.

NOTE: The MR command has been deprecated, and should no longer be used. It is included here solely for compatibility with older programs. New applications should make use of the EG command.

Command Details:

Structure	MR{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Microstep Resolution (code)
- units	Integer
- range	0 - 15: Code, steps/rev 0 = 200 1 = 400 3 = 2000 4 = 5000 5 = 10,000 6 = 12,800 7 = 18,000 8 = 20,000 9 = 21,600 10 = 25,000 11 = 25,400 12 = 25,600 13 = 36,000 14 = 50,000 15 = 50,800

Examples:

Command	Drive sends	Notes
MR8	-	Set the drive's microstep resolution to 20,000 steps/rev
MR	MR=8	

MS - Control Mode Selection

Compatibility: SV200 series servo drives only
Affects: Control mode, Input #8
See also: CM, CN commands

Defines the usage of input X8 for control mode selection.
MS1: CM is selected when input X8 is open, and CN is selected when input X8 is closed.
MS2: CM is selected when input X8 is closed, and CN is selected when input X8 is open.
MS3: Input X8 is used as general purpose input. Drive control mode is main mode (CM).

Command Details:

Structure	MS{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	Control Mode Selection(see above)
- units	integer code
- range	1~3
Default value:	3

Examples:

Command	Drive sends	Notes
MS1	%	set the usage of control mode selection to 1
MS	MS=1	the usage of control mode selection is 1

MT - Multi-Tasking

Compatibility: Q drives only
Affects: All move commands
See also: CJ, OI, QJ, TI, TR, and WM commands

Sets or request the status of the multi-tasking function (on or off). When multi-tasking is enabled (on), commands such as FL (Feed to Length) or HW (Hand Wheel) do not block execution of subsequent commands in the queue or program segment. This allows executing other type of operations, such as setting outputs (SO), while a move is taking place.

Command Details:

Structure	MT{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	No
Register Access	None

Parameter Details:

Parameter #1	Multi-tasking switch
- units	integer
- range	0 = multi-tasking disabled 1 = multi-tasking enabled

Examples:

Command	Drive sends	Notes
MT1	-	Enables multi-tasking
MT	MT=1	

MV - Model & Revision

Compatibility: All drives and integrated motors except BLu servo drives
See also: MN, RV commands

Requests the connected drive's DSP firmware version, model number code, and sub-model number code (if applicable). Not all drive series utilize the sub-model number code. The response from the drive is a single string of characters with no breaks or delimiters. The sequence of characters is firmware revision (3 numbers and 1 letter), model number code (3 numbers), sub-model number code (1 letter). See Response Details below.

Command Details:

Structure	MV
Type	IMMEDIATE
Usage	READ ONLY
Non-Volatile	No
Register Access	None

Response Details:

Response will be in the format AAAABBBC, where AAAA is the firmware version, BBB is the model number code, and C is the sub-model number code. Model and sub-model number codes are listed below by drive, and Examples are given afterward.

Drive	Model Number
SV7-S	11
SV7-Q	12
SV7-Si	13
SV7-CANopen	14
SV7-IP	15
SV7-Q Ethernet	16
ST5-Q Ethernet	17
ST10-Q Ethernet	19
ST5-S	20
ST10-S	21
ST5-Q	22
ST5-Si	23
ST10-Q	24
ST10-Si	25
ST5plus	26
ST10plus	27
ST5 can open	28
ST10 can open	29
BLuAC5-S	36
BLuAC5-Q	37
BLuAC5-Si	38
STAC6-S	41
STAC6-Q	42
STAC6-Si	43
STAC6-S-220	44
STAC6-Q-220	45
STAC6-Si-220	46
STAC6-C	47
STAC6-C-220	48
STM23-S family	49
STM23-Q family	50
STM24-SF family	51
STM24-QF family	52
STM24-C family	53
STM23-C family	54
STM17-S family	55
STM17-Q family	56
STM17-C family	57
BLuAC5-SE	68

BLuAC5-QE	69
STM23IP	70
STAC6-SE	73
STAC6-QE	74
ST5-IP	75
STAC6-SE-220	76
STAC6-QE-220	77
ST10-IP	78
STAC5-S	79
STAC5-Q	80
STAC5-IP	83
STAC5-S-220	85
STAC5-Q-220	86
STAC5-IP-220	89
STM24IP-xxx	90
SVAC3-S	91
SVAC3-Q	92
SVAC3-IP	95
SVAC3-S-220	97
SVAC3-Q-220	98
SVAC3-IP-220	101
TSM23	103-105
TSM17	111-112
SWM24IP-xxx	128
SWM24S-xxx	144
SWM24Q-xxx	145
SWM24C-xxx	146
TXM24S-xxx	147
TXM24Q-xxx	148
TXM24C-xxx	149
SSM23-IP	162
TXM24-IP	165
TSM11	171
SV200	180
SV200DC	181
STF	176

Examples:

Command	Drive sends	Notes
MV	100Q012	Drive connected has DSP firmware version 1.00Q, and the drive model number is SV7-Q
MV	103F042	Drive connected has DSP firmware version 1.03F, and the drive model number is STAC6-Q
MV	102J049A	Drive connected has DSP firmware version 1.03F, and the drive model number is STM23S-2AN

NO - No Operation

Compatibility: Q drives only
Affects: Stored program flow

Q programs halt execution at blank lines. If a “no op” line is required in a program, for comments or other purposes, rather than leave the line blank the NO command is used. Think of the NO command as leaving a blank line in the middle of a sequence of commands. This is useful if after creating a sequence of commands you would like to delete a command without the line numbers of the remaining commands changing. Instead of deleting the line with the unwanted command, replace the unwanted command with a NO command and the remaining commands in the sequence will maintain their respective line numbers.

NOTE: NO commands are not required after the last command in a segment.

Command Details:

Structure	NO
Type	BUFFERED
Usage	WRITE ONLY
Non-Volatile	NO
Register Access	None

Examples:

Command	Drive sends	Notes
NO	-	No operation takes place at this program line

OF - On Fault

Compatibility: Q drives only
Affects: Stored program flow
See also: AL, AX, AX, ME, OI commands

When a drive fault occurs, the OF command causes a given program segment to immediately load from non-volatile memory into the queue. The OF command acts as a kind of software switch in that when this function is turned on the drive's response to a drive fault (loading the designated program segment) is automatic. Once a fault occurs the fault must be cleared (AX) and the motor re-enabled (ME) before continuing normal program execution.

Please note that while immediately executing AX will clear the alarm code, it does not guarantee that the condition that caused the alarm has been resolved. Therefore it is recommended to include a short delay or wait for user input before clearing the alarm and resuming normal operation.

Also, a drive fault will turn the OF function off, so after a fault the OF command must be executed again to reset the function. For this reason it is common to place the OF command in segment 1 of a Q program, and then load segment 1 (QX1) from the designated OF segment after the fault has been cleared and the motor re-enabled. A parameter value of "0" disables the On Fault function. See the AL (Alarm code) command for details of drive faults.

Command Details:

Structure	OF(Parameter #1)
Type	BUFFERED
Usage	WRITE ONLY
Non-Volatile	No
Register Access	None

Parameter Details:

Parameter #1	program segment #
- units	integer
- range	1 - 12 = segment 1 - 12 0 = disable On Fault function

Examples:

Command	Drive sends	Notes
In segment 1 of a Q program...		
OF9	-	When a drive fault occurs load and execute program segment 9
In segment 9 of the same Q program...		
WT0.1	-	Short delay to allow the system to settle
AX	-	Alarm reset
ME	-	Motor enable
QX1	-	Load and execute segment 1, which will also reset the OF function.
OF0	-	Disable the On Fault function

OI - On Input

Compatibility: Q drives only
Affects: Interrupt function and stored program flow
See also: MT, OF command

When the given input condition is met the OI command causes program segment 10 to immediately load from non-volatile memory into the queue. The OI command operates as a kind of software switch. Executing the command turns the interrupt function on. Responding to the interrupt input (by loading segment 10) turns the interrupt function off. Therefore after an interrupt condition is cleared in the system the OI command must be executed again to reset the interrupt function. One way to do this is place a copy of the OI command near the end of segment 10, before loading and executing another segment (QX command). Only one interrupt input can be defined at a time within a program. Executing the OI command with no parameter disables the interrupt function.

If Multi-Tasking is disabled (MT0, default) when the input condition is met, any move in progress will be aborted and Segment 10 will be loaded immediately. If Multi-Tasking is enabled (MT1) when the input condition is met, the program will branch to Segment 10 without interrupting a move in progress. In this scenario a Stop Move (SM) command may be used to abort the move.

Command Details:

Structure	OI{Parameter #1}
Type	BUFFERED
Usage	WRITE ONLY
Non-Volatile	No
Register Access	None

Parameter Details:

(See Appendix F: Working With Inputs and Outputs)

Examples:

Command	Drive sends	Notes
MT0	-	Turn Multi-Tasking off
OIX5F	-	Load and execute program segment 10 when input X5 goes from high to low. If a move is in progress, abort it.
MT1	-	Turn Multi-Tasking on
OIX5F	-	Load and execute program segment 10 when input X5 goes from high to low. Has no effect on a move already in progress.
OI	-	Disable interrupt function

OP - Option board

Compatibility: All drives
See also: IF, MV commands

Requests the decimal or hexadecimal equivalent (see IF command) of the option board's 7-bit binary word. Since some drives - like the SV, ST-Q/Si, and STM drives - are available with different option boards, it is useful for the host to be able to request this information from the drive. The 7 bits in the option board's binary word are shown below.

Bit	Value (Hex)	SV7	SVAC3	ST	STAC5
0	1	Encoder Board	Encoder Board	Encoder Board	Encoder Board
1	2	RS-485	reserved	RS-485	reserved
2	4	CANOpen	reserved	CANOpen	reserved
3	8	reserved	reserved	reserved	reserved
4	10	reserved	reserved	reserved	reserved
5	20	MCF Board *	reserved	MCF Board *	Expanded I/O
6	40	Ethernet	Ethernet	Ethernet	0
7	80	reserved	Expanded I/O	reserved	reserved

* This board includes encoder output so drives with this option will also have bit 0 set

Command Details:

Structure	OP
Type	IMMEDIATE
Usage	READ ONLY
Non-Volatile	Yes
Register Access	None

Examples:

IF command set for decimal (IFD)...

Command	Drive sends	Notes
OP	OP3	Drive has both encoder and RS-485 option boards installed
OP	OP4	Drive has CANOpen board installed
OP	OP33	Drive has MCF board installed (bits 0 and 5 are set)

IF command set for hexadecimal (IFH)...

Command	Drive sends	Notes
OP	OP0003	Drive has both encoder and RS-485 option boards installed
OP	OP0004	Drive has CANOpen board installed
OP	OP0021	Drive has MCF board installed

PA - Power-up Acceleration Current

Compatibility: STM Integrated Step Motors
Affects: Motor accel/decel current and torque
See also: PC, CC, CA, SA commands

Sets or requests the power-up accel/decel current setting ("peak of sine") of the stepper drive, also known as the peak current. PA is similar to the CA command in that a change to PA affects the current value of the accel/decel current. However PA differs from CA in that a change to PA is automatically written to non-volatile memory at the time of the change. For a change in CA to be written to non-volatile memory an SA command must be executed afterwards. See below for more details. PA will only accept parameter values equal or larger than the current PC setting.

Relationship of PA, CA, and "M" register:

- A change to PA affects the current accel/decel current value and is automatically stored in non-volatile memory.
- A change to PA automatically changes CA and the "M" register to the same value.
- A change to CA or the "M" register only affects the current accel/decel current value, but does not automatically change PA to the same value.
- A change to CA or the "M" register is stored in non-volatile memory only after an SA command is executed. When this occurs the PA command is also automatically changed to the new value.

NOTE: PA has no effect in Command Mode 7 (CM7 - Step and Direction mode).

Command Details:

Structure	PA{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes (see note below)
Register Access	"M" (029)

Note: The PA and CA commands use different units than the "M" register; see Data Registers section for details

Parameter Details:

Parameter #1	Power-up accel/decel current
- units	Amps (resolution is 0.01 amps)
- range	STM24: 0-6.0 STM23: 0-5.0 STM17: 0-2.0

Configurator software may also be used to set all current levels.

NOTE: This data is saved to non-volatile memory immediately upon execution. It is not required to execute the SA command to save to non-volatile memory.

Example:

STM17, STM23, STM24

Command	Drive sends	Notes
PA1.2	-	Set power-up accel/decel current to 1.2 amps (peak of sine)
PA	PA=1.2	

PB - Power-up Baud Rate

Compatibility: All drives
See also: BR, PR, TD commands

Sets or requests the power-up baud rate for serial communications. When executed, this command sets the baud rate and immediately saves it to non-volatile memory. At power-up the drive defaults to 9600 baud. If an Applied Motion software application is not detected after 1 second and the drive is configured for host operation the drive will set the baud rate according to the value stored in the Power-up Baud Rate non-volatile parameter. A host system can change the baud rate at any time.

NOTE: Setting the baud rate takes effect immediately.

Command Details:

Structure	PB{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes (see note below)
Register Access	None

Parameter Details:

Parameter #1	Baud rate code
- units	integer code
- range	1 = 9600 2 = 19200 3 = 38400 4 = 57600 5 = 115200

NOTE: This data is saved to non-volatile memory immediately upon execution. It is not required to execute the SA command to save to non-volatile memory.

Examples:

Command	Drive sends	Notes
PB2	-	Power-up baud rate is set to 19200 and this value is immediately saved to non-volatile memory
PB	PB=2	

PC - Power-up Current

Compatibility: All drives
Affects: Motor current and torque
See also: CC, PI, PP commands

If using a stepper drive, PC sets or requests the continuous (RMS) current setting of the servo drive. If using a servo drive, PC sets or requests the current setting ("peak of sine") of the stepper drive, also known as the running current.

NOTE: This command is similar to CC. It differs only in that in addition to setting the continuous current of the drive, PC also immediately saves the setting to NV memory. See CC command for further details.

Command Details:

Structure	PC{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes (see note below)
Register Access	"N" (030) Note: The PC and CC commands use different units than the "N" register; see Data Registers section for details

Parameter Details:

BLu, SV, SVAC3

Parameter #1	Power-up continuous current setting
- units	amps rms (resolution is 0.01 amps)
- range	BLuDC4: 0 - 4.5 BLuDC9: 0 - 9.0 BLuAC5: 0 - 5.0 SV: 0 - 7.0 SVAC3 (120V): 0 - 3.5 SVAC3 (220V): 0 - 1.8

STAC6, ST-Q/Si, ST-S, STM, STAC5

Parameter #1	Running current
- units	amps (resolution is 0.01 amps)
- range	STAC6: 0 - 6.0 ST5 : 0 - 5.0 ST10: 0 - 10.0 STM17: 0 - 2.0 STM23: 0 - 5.0 STM24: 0 - 6.0 STAC5 (120V): 0 - 5 STAC5 (220V): 0 - 2.55

NOTE: Applied Motion recommends using Configurator software to select a motor and set the maximum current.

Examples:

Command	Drive sends	Notes
PC3.2	-	Set power-up continuous current to 3.2 amps RMS for servo drive or 3.2 amps running current for stepper drive
PC	PC=3.2	

PD - In-Position Counts

Compatibility: SSM, TSM, TXM, SS, SSAC and SV200 series servo
See also: MO, TO, PE commands

This parameter is used to set static in-position error range. When the actual position is within the target In-position error range for a time duration that exceeds the PE specified timing, then the driver will define the motion complete or motor in-position.

Command Details:

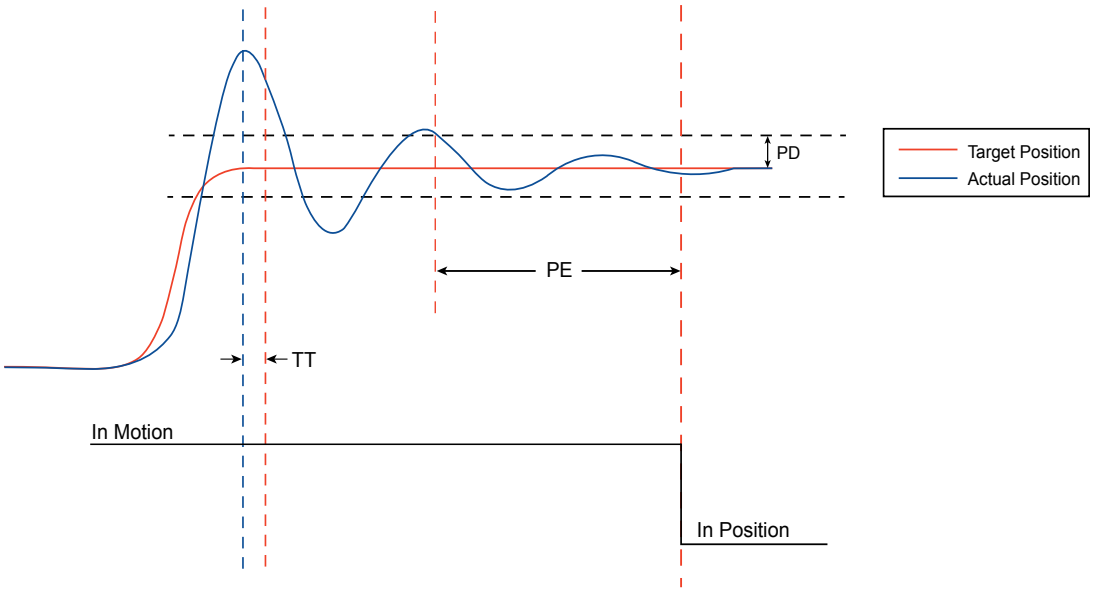
Structure	PD{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	In-position limit
- units	encoder counts
- range	0~32767
-default	

Examples:

Command	Drive sends	Notes
PD100	-	Sets the static in-position limit to 100 encoder counts
PD	PD=100	



PE - In-Position Timing

Compatibility: SSM, TSM, TXM, SS, SSAC and SV200 series servo drives
See also: MO, TO, PD commands

Sets or requests the time duration for in range determination. For example, when In position error PD is defined, PE will set the time duration for in-position test condition. The drive defines the motor as in position when the actual position is within the target position range (PD) for the defined minimum time (PE).

Time is counted as processor cycles, one cycle refers to 200µsec (250µsec for SV200).

Command Details:

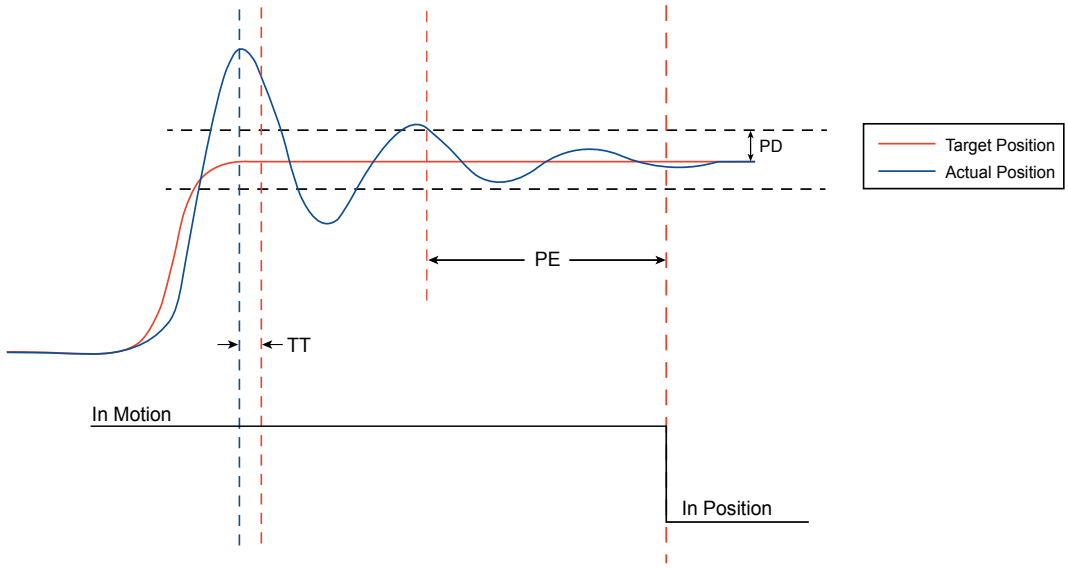
Structure	PE{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	In-position Timing
- units	200µsec, (250µsec for SV200)
- range	0~30000
-default	10

Examples:

Command	Drive sends	Notes
PE100	-	Sets the static in-position timing to 20ms for in range determination on a StepSERVO.
PE	PE=100	



PF - Position Fault

Compatibility: Servo drives and stepper drives with encoder feedback

Servo drives

Sets or requests the Position Fault limit in encoder counts. This value defines the limit threshold, in encoder counts, reached between actual position and commanded position before the system produces a position fault error.

Stepper drives:

Sets or requests the “percentage of torque” used in the Stall Prevention function for systems with an encoder installed on the motor. Making this setting with the PF command requires that an SA (Save) command be sent afterwards, then a power-down/power-up cycle before the change will take effect. It is recommended that the *Configurator* software be used to make this setting.

Command Details:

Structure	PF{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes
Register Access	None

Parameter Details:

Parameter #1	Servo: Position fault limit Stepper: Percentage of torque
- units	Servo: encoder counts Stepper: percentage of torque
- range	Servo: 1 - 32767 Stepper: 0 - 100 (percent)

Examples:

Command	Drive sends	Notes
PF2000	-	Set position fault limit to 2000 counts in servo drive
PF	PF=2000	
PF50	-	Set percentage of torque to 50% in stepper drive fitted with encoder and with the Stall Prevention function turned on
PF	PF=50	

PH - Inhibit Pulse Command

Compatibility: SV200 series servo drives only
Affects: Control mode 7, Input #10

Defines the usage of input X10 as inhibiting the pulse input as position command.
PH1: Inhibit the pulse input as position command when input X10 is closed.
PH2: Inhibit the pulse input as position command when input X10 is open.
PH3: Input X10 is used as general purpose input.

Command Details:

Structure	PH{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	inhibit pulse command
- units	Integer
- range	1~3
-default value	3

Examples:

Command	Drive sends	Notes
PH1	%	Sets the usage of the pulse command inhibit function to 1
PH	PH=1	The usage of the pulse command inhibit function is 1

PI - Power-up Idle Current

Compatibility: Stepper drives only
Affects: Motor current at standstill, holding torque
See also: CC, CD, CI commands

Idle current is the level of current supplied to each motor phase when the motor is not moving. Using an idle current level lower than the running motor current (see CC and PC commands) aids in motor cooling. A common level used for the idle current setting is 50% of the running current. After a motor move, there is a time delay after the motor takes its last step before the reduction to the idle current takes place. This delay is set by the CD command.

This command is similar to the CI command. It differs only in that in addition to setting the idle current of the drive, PI also immediately saves the setting to NV memory. See CI command page for details.

Command Details:

Structure	PI{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	Yes (see note below)
Register Access	“O” (031) Note: The CI command uses different units than the “O” register; see Data Registers section for more details

Parameter Details:

STAC6

Parameter #1	Idle current at power-up
- units	amps
- range	0 - 100% of running current

ST-Q/Si, ST-S, STM, STAC5

Parameter #1	Idle current at power-up
- units	amps
- range	0 - 90% of running current

NOTE: This data is saved to non-volatile memory immediately upon execution. It is not required to execute the SA command to save to non-volatile memory.

Examples:

Command	Drive sends	Notes
PI0.75	-	Set power-up idle current to 0.75 amps
PI	PI=0.75	

PK - Parameter Lock

Compatibility: SV200 series servo drive only
Affects: Front panel operation

This parameter determines whether or not the front panel push buttons can be used to modify drive parameters. Locking out the front panel can be done to prevent drive parameters from being changed without a connection to a PC running ***SVX Servo Suite***.

0 = can be modified on front panel
1 = can not be modified on front panel

Command Details:

Structure	PK{Parameter #1}
Type	BUFFERED
Usage	READ/WRITE
Non-Volatile	YES
Register Access	None

Parameter Details:

Parameter #1	See above
- units	Integer
- range	0~1
-default	0

Examples:

Command	Drive sends	Notes
PK0	%	Allow the parameters to be modified at drive's front panel
PK	PK=0	the parameters can be modified through the front panel