Command:CUSTOMA (CCA)

MS2000 Syntax

Shortcut	CCA
Format	CCA X=n Y=m Z=o
Remembered	X automatically saved (see note), Y and Z require SS Z

Tiger Syntax

Shortcut	CCA
Format	[Addr#]CCA X=n Y=m Z=o
Type	Card-Addressed
Remembered	X automatically saved (see note), Y and Z require [Addr#]SS Z

Note: For the Tiger programmable logic card this command is used differently, see the Tiger Programmable Logic Card (TGPLC) documentation and ignore this page.

X parameter

X sets the configuration flags according to the table below for builds with STNDRD_XY and/or STNDRD_Z axis profiles. Configuration flags are changed one at a time for each execution of the CCA command. The changes will not take effect until the controller is power cycled or reset via the RESET command.

Important: The controller should be reset immediately after setting any desired **CCA X** flags, either toggle the physical power switch or send the **RESET** command.

Note: The X parameter is saved automatically, you do not need to send the **SS Z** command.

Warning! Executing a **SS Z** command before resetting can cause the firmware to get confused. *See notes below.*

Set CCA X=# and reset the controller before changing any settings that require SS Z to be saved.

1. Set CCA X=# flags
2. Reset the controller
3. Change other settings
4. Save settings with SS Z

CCA X=	Description	Display	MS-2000 Specific Comments	TG-1000 Specific Comments
1	XY Linear Encoders Used	L	Use DIP SW 3 (See Note 1)	
2	XY Rotary Encoders Used	R	Use DIP SW 3 (See Note 1)	
3	Z Linear Encoders Used	L	Use DIP SW 6 (See Note 1)	
4	Z Rotary Encoders Used	R	Use DIP SW 6 (See Note 1)	
5	XY Leadscrew Coarse Pitch (6.35 mm - Standard)	B	Firmware Default	
6	XY Leadscrew Fine Pitch (1.59 mm)	A		
41	XY Leadscrew Medium (3.18 mm)	M		
7	XY Leadscrew Super Coarse (12.7 mm)	C		
18	XY Leadscrew Ultra Coarse (25.4 mm)	D		
8	XY Leadscrew Ultra Fine (0.635 mm)	U	0.635 Leadscrew post 9.0e , 0.317mm pre 9.0e	
38	XY Leadscrew Ultra-ultra Fine (0.318mm)	u		
15	XY GTS Motor/Fine Pitch (1.59 mm)	a		
20	XY GTS Motor/Medium Pitch (3.18 mm)	8		
16	XY GTS Motor/Coarse Pitch (6.35 mm)	b		
17	XY GTS Motor/Super Coarse (12.7 mm)	c		
63	XY Heavy Lift Stage Medium Pitch (3.18 mm)	L		
28	XY SISKIYOU Motor/Leadscrew	S		
39	XY MA-12B Linear Actuators	T		
42	XY Maxon Direct-Drive (1.59 mm)	x		Not Implemented
43	XY Maxon Direct-Drive (3.18 mm)	e		Not Implemented
44	XY Maxon Direct-Drive (6.35 mm)	X		Not Implemented
48	XY LS25 Fine Pitch (1.59 mm)	G	Version 9.2l+	
56	XY LS25 Coarse Pitch (6.35 mm)	H	Version 9.2m+	
59	XY LS25 Extra-fine Pitch (0.635 mm)	g	Version 9.2n+	
58	XY Leadscrew Ultra Coarse (25.4 mm) with 76:1 Gear motor	E	Version 9.2l+	
21	XY Linear Encoder 10 nm resolution	1	Firmware default	
22	XY Linear Encoder 20 nm resolution	2		
50	XY Linear Encoder 50 nm resolution	5		
51	XY Linear Encoder 5nm resolution	K	Version 9.0e+	
52	XY Linear Encoder 2.5nm resolution	L	Version 9.0e+	
30	XY Limit Polarity - Normally Open	o	Firmware default	
31	XY Limit Polarity - Normally Closed	c		
9	Z Scope Drive 100 um/rev.	1	Firmware default	
10	Z Scope Drive 200 um/rev.	2		
19	Z Scope Drive 400 um/rev.	4		

CCA X=	Description	Display	MS-2000 Specific Comments	TG-1000 Specific Comments
60	Z Scope Drive 500 counts/rev Rotary Encoder	D	Firmware Default	
61	Z Scope Drive 1000 counts/rev Rotary Encoder	M		
62	Z Scope Drive 2048 counts/rev Rotary Encoder	2		
11	Z Leadscrew Coarse Pitch	B		
12	Z Leadscrew Fine Pitch	A		
13	Z Leadscrew Super Coarse Pitch	C		
14	Z Leadscrew Ultra Fine Pitch	U		
47	Z Leadscrew Ultra Coarse	D		
45	Z GTS Motor/Fine Pitch (1.59 mm)	a		
46	Z GTS Motor/Coarse Pitch (6.35 mm)	b		
68	Z Heavy Lift Stage Medium Pitch (6.35 mm)	L		
29	Z SISKIYOU Motor/Leadscrew	S		
49	Z LS25 Fine Pitch (1.59 mm)	G	Version 9.2l+	
57	Z LS25 Coarse Pitch (6.35 mm)	H	Version 9.2m+	
64	Z LS25 Ultra Fine Pitch (0.635 mm)	g	Version 9.2o+	
26	ZF Linear Encoder 10 nm resolution	1	Leadscrew devices only. LE resolution is 50nm on scope drives.	
27	ZF Linear Encoder 20 nm resolution	2		
53	ZF Linear Encoder 5nm resolution	K	Version 9.0h+	
54	ZF Linear Encoder 2.5nm resolution	L	Version 9.0h+	
55	ZF Linear Encoder 50nm resolution	5	Version 9.2f+	
32	ZF Limit Polarity - Normally Open	o	Firmware default	
33	ZF Limit Polarity - Normally Closed	c		
34	Piezo Range 50 um	f or Pf		
65	Piezo Range 70 um	g or Pg	Not Implemented	
23	Piezo Range 100 um	1 or P1		
35	Piezo Range 150 um	S or PS	Firmware default	
24	Piezo Range 200 um	2 or P2		
36	Piezo Range 300 um	3 or P3		
25	Piezo Range 350 um	t or P4		
67	Piezo Range 400 um	6		
37	Piezo Range 500 um	5 or P5		
66	Piezo Range 1000 um	W	Experimental	Not Implemented
(20)	(Reserved for LX-4000 LE Flag)		Does not apply to MS2000 or Tiger.	
(26)	(Reserved for Tracer Enable)		Does not apply to MS2000 or Tiger.	
70	The joystick and knob are always enabled, and the device assignments cannot be changed. The JOYSTICK command has no effect.	J	Version 9.0f and later.	Not Implemented
71	The joystick and knob can be disabled, and the device assignments can be changed. The JOYSTICK command works normally.	j	Firmware default. Version 9.0f and later.	Not Implemented
	Fixed Profile	F	Place holder profile	
	MicroMirror 6 degrees	U6	TG-1000 only	

CCA X=	Description	Display	MS-2000 Specific Comments	TG-1000 Specific Comments
	MicroMirror 8 degrees	U8		TG-1000 only
	MicroMirror 10 degrees	UA		TG-1000 only

Note 1: Applies to LX-4000 systems only. On MS-2000 and MS-4000 systems, use DIP Switch #3 for XY linear encoders and DIP Switch #6 for Z-axis linear encoders instead of this CCA setting.

Example

```
CCA X=6
:A
```

Sets to XY stage for 1.59mm pitch lead screws.

CCA X? Returns string representing current state of flags
A: XY:RA Z:RN Shows XY stage is rotary encoded, lead screw pitch A (1.59mm), and Z-drive is rotary encoded, 100µm/turn scope motor drive.
A: XY:RAj Z:RN Shows XY stage is rotary encoded, lead screw pitch A (1.59mm), JOYSTICK command works normally for all axes, and Z-drive is rotary encoded, 100µm/turn scope motor drive. Version 8.8i and all later 8.8x; version 9.0f and later.
XY:F or Z:F indicate that the XY or Z settings are Fixed by the firmware build and cannot be changed using the CCA command.

A listing of the valid CCA X configuration flags is displayed for firmware builds where sufficient space is available.

```
 A: XY:RBJ Z:RN PF:2

5  XY B PITCH 4/in
6  XY A PITCH 16/in
7  XY C PITCH 2/in
8  XY 0 PITCH 80/in
18 XY D PITCH 1/in
21 XY 1 XYLE 10nm
22 XY 2 XYLE 20nm

9  Z N SCOPE 100u/T
10 Z Z SCOPE 200u/T
11 Z B PITCH 4/in
12 Z A PITCH 16/in
13 Z C PITCH 2/in
14 Z U PITCH 80/in
19 Z H SCOPE 100u/T 25nm

23 P 1 100um RANGE
24 P 2 200um RANGE
```

Y parameter

Y sets number of move repetitions. Default value is zero. That is, a MOVE command causes the system to initiate one move to the given position. If m > 0, then the move will be initiated more than once as a means to achieve fine adjustment and a more stable landing. This parameter is saved in non-volatile memory by the SS Z command. Requires MOVETASK firmware module which is standard for XY builds but not most others.

Example

```
CCA Y=3
:A
```

All moves will be initiated four times.

Z parameter

Z sets system configuration flags according to following table. Parameter changes must be saved in non-volatile memory by the ''SS Z'' command.

CCA Z=	Description	Display	MS2K Comment	TG-1000
1	X axis movement direction is positive (default).	+	Firmware Default	
2	X axis movement direction is negative.	-		
3	Y axis movement is positive (default) (Note: In the MS-4000, the default direction value for the Y axis is -1)	+	Firmware Default	
4	Y axis movement is negative.	-		
5	Z axis movement is positive	+	Firmware Default	
6	Z axis movement is negative.	-		
7	F axis movement is positive.	+		
8	F axis movement is negative.	-		
9	Disengage clutch	D		
10	Engage clutch	E		
11	Enable LCD display	O		Not Implemented
12	Disable LCD display	F		Not Implemented
13	CLOCKED DEVICES on 1st axis take shortest path	S		Applied to both axes until 3.10
14	CLOCKED DEVICES on 1st axis do not take shortest path	L		Applied to both axes until 3.10
15	Disable ADEPT piezo self test on startup	N	MS-2000 9.2d required.	
16	Enable ADEPT piezo self test on startup	C	Firmware Default, MS-2000 v9.2d required.	Firmware Default

CCA Z=	Description	Display	MS2K Comment	TG-1000
17	CLOCKED DEVICES on 2nd axis take shortest path	S	Works in 9.2m and above	
18	CLOCKED DEVICES on 2nd axis do not take shortest path	L	Works in 9.2m and above	
20	The joystick and knob are always enabled, and the device assignments cannot be changed. The JOYSTICK command has no effect..	j	MS-2000 v9.0f required.	Not Implemented
21	The joystick and knob can be disabled, and the device assignments can be changed. The JOYSTICK command works normally.	J	Firmware Default, MS-2000 v9.0f required.	Implemented by default
22	Reverses joystick polarity of the card's first axis	r	TG-1000 only, v3.05 required. Re-issue J command or restart after SS Z to take effect.	
23	Joystick polarity of card's first axis set to default	I	TG-1000 only, Firmware Default v3.05 required. Re-issue J command or restart after SS Z to take effect.	
24	Reverses joystick polarity of the card's second axis	r	TG-1000 only, v3.05 required. Re-issue J command or restart after SS Z to take effect.	
25	Joystick polarity of card's second axis set to default	I	TG-1000 only, Firmware Default, v3.05 required. Re-issue J command or restart after SS Z to take effect.	
26	Enable Encoder E flag check Expressed as error 110+ in dump buffer		MS-2000 only, v9.2j required.	
27	Disable Encoder E flag check		MS-2000 only, Firmware Default, v9.2j required.	
28	Buttons are always enabled and cannot be disabled. The button functions cannot be changed. The BENABLE and BCUSTOM commands have no effect.	b	MS-2000 v9.55 required.	
29	Buttons can be disabled and button functions can be changed. The BENABLE and BCUSTOM commands work normally.	B	Firmware Default MS-2000 v9.55 required.	

Note: A few products have different axis names. When in doubt, call ASI.

commands, tiger, ms2000