VXM™ - Command Summary

VXM Program Stored Commands

Motor commands:	
ImMx	Set steps to incremental Index motor CW (positive), m= motor# (1,2,3,4), x=1 to 16,777,215
ImM-x	Set steps to incremental Index motor CCW (negative), m= motor# (1,2,3,4), x=1 to 16,777,215
IAmMx	Set Absolute Index distance, m=motor# (1,2,3,4), x= ±1 to ±16,777,215 steps
IAmM0	Index motor to Absolute zero position, m=motor# (1,2,3,4)
IAmM-0	Zero motor position for motor# m, m= 1,2,3,4
ImM0	Index motor until positive limit is encountered, m=motor# (1,2,3,4)
ImM-0	Index motor until negative limit is encountered, m=motor# (1,2,3,4)
(i3,i1...)	Combine Index commands to run simultaneously on two VXM controllers connected by VXM bus
SmMx	Set Speed of motor (70% power), m= motor# (1,2,3,4), x=1 to 6000 steps/sec.
SAmMx	Set Speed of motor (100% power), m= motor# (1,2,3,4), x=1 to 6000 steps/sec.
SmM-x	Read and assign analog input value to motor m speed (70% power), x= range
SAmM-x	Read and assign analog input value to motor m speed (100% power), x= range
AmMx	Acceleration/deceleration, m= motor# (1,2,3,4), x=1 to 127.
Looping/branching commands:	
L0	Loop continually from the beginning or Loop-to-marker of the current program
LM0	Sets the Loop-to-marker at the current location in the program
LM-0	Resets the Loop-to-marker to the beginning of the current program
Lx	Loop from beginning or Loop-to-marker x-1 times (x=2 to 65,535), when the loop reaches its last count the non-loop command directly preceding will be ignored
L-x	Loop from beginning or Loop-to-marker x-1 times, alternating direction of motor 1, when the loop reaches its last count the non-loop command directly preceding will be ignored
LAx	Loop Always from beginning or Loop-to-marker x-1 times (x=2 to 65,535)
LA-x	Loop Always from beginning or Loop-to-marker x-1 times, alternating direction of motor 1
LM-2	Loop once from beginning or Loop-to-marker reversing index direction of motor 2
LM-3	Loop once from beginning or Loop-to-marker reversing index direction of motor 1 and motor 2
Jx	Jump to the beginning of program number x, x= 0 to 4
JMx	Jump to the beginning of program number x and come back for More after program x ends, x= 0 to 4
JM-x	Similar to JMx except automatically moves back from absolute indexes after program x ends: For pick-and-place within matrix looping patterns
Pausing commands:	
Px	Pause x tenths of a second, (x=0 to 65,535)
P-x	Pause x tenths of a millisecond, (x=1 to 65,535)
PAx	Pause x tenths of a second (x=0 to 65,535, 10 µsec pause when x=0) Altering output 1 high for duration of the pause, tenths of a millisecond when x is negative
PA-x	Pause x tenths of a millisecond (x=1 to 65,535) Altering output 1 high for duration of the pause
Input/output commands:	
U0	Wait for a "low" on user input 1
U1	Wait for a low on user input 1, holding user output 1 high while waiting
U2	Enable Jog mode while waiting for an input
U3	Disable Jog mode while waiting for an input
U4	User output 1 "low" (reset state)
U5	User output 1 high
U6	Send "W" to host and wait for a "G" to continue
U7	Start of Continuous Index with pulse on output 2
U77	Start of Continuous Index with no output
U8	Start of Continuous Index sending "@" to the host
U9	End of Continuous Index with auto-decel to stop
U91	End of Continuous Index with auto-generate a deceleration Index as next command
U92	End of Continuous Index using next Index for deceleration to stop
U99	End of Continuous Index with instantaneous stop
U11	Skip next command if input 1 is high
U21	Skip next command if input 1 is low
U12	Skip next command if input 2 is high
U22	Skip next command if input 2 is low
U13	Wait for a front panel button to jump to a program or continue: "Motor 1 Jog -" button to jump to program #1, "Motor 1 Jog +" button to jump to program #2, "Run" button
U14	User output 2 low (reset state)
U15	User output 2 high
U16	Optional User output 3 low (reset state)
U17	Optional User output 3 high
U18	Optional User output 4 low (reset state)
U19	Optional User output 4 high
U23	Wait for a front panel button to jump to a program and come back, or continue: "Motor 1 Jog -" button to jump and return to program #1, “Motor 1 Jog +" button to jump and return to
U30	Wait for a low to high transition on user input 1
U31	Wait for a low to high transition on user input 1, holding user output 1 high while waiting
U32	Wait for "Motor 1 Jog -" button to be pressed on front panel with debouncing
U33	Wait for "Motor 1 Jog +" button to be pressed on front panel with debouncing
U50	Wait for a low and high on user input 1 with debouncing for a mechanical push-button switch
U51	Wait for a low and high on user input 1 with debouncing for a mechanical push-button switch, holding user output 1 high while waiting
U90	Wait for a low to high on the Run button or connection I/O,4 with debouncing for a mechanical push-button switch

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VXM™ - Command Summary (continued)

VXM Set Commands

setMmMx	Set axis m for motor type/size (see table below for value for value X)
setDMx	Set VXM/VP9000 or NF90 emulation modes, and other operating parameters
setDAx	Set Analog Joystick Deadband value
setjmM	Set first Jog Speed setting for motor m
setjAmM	Set first Analog Joystick range setting for motor m
setJmM	Set second Jog Speed setting for motor m
setJAmM	Set second Analog Joystick range setting for motor m
setLmMx	Set limit switch mode for axis m
setPmMx	Set “Pulse Ever
setPAx	y x # Steps” on output 2 for axis m
setPmMx	Set Pulse width used by and , x=1 to 255 (10 sec increments)
setIx	Set operating mode of inputs
setBx	Set RS-232 Baud rate (9=9600, 19=19200, 38=38400)
Bx	Backlash compensation, x=0 to 255, 0= off (default), 1= 20 steps
Ox	Indicate limit switch Over-travel to host, off when x=0, VXM sends "O" when x=1 and hit limit, x=3 program stops too
PMAx	Program Associate program x in Master to program x in Slave (Linked VXMs start the same time) (255= default/ disabled)

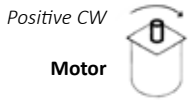
VXM Immediate Commands

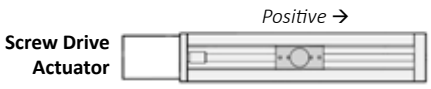
Operation commands:	
C	Clear all commands from currently selected program
D	Decelerate to a stop (interrupts current index/ program in progress)
E	Enable On-Line mode with echo "on"
F	Enable On-Line mode with echo "off"
G	Enable On-Line mode with echo off Grouping a <cr> with "^", ":", "W", "O" responses; Also Go after waiting or holding
H	Put Controller on Hold (stop after each command and wait for go)
K	Kill operation/program in progress and reset user outputs
N	Null (zero) motors 1,2,3,4 absolute position registers
Q	Quit On-Line mode (return to Local mode)
R	Run currently selected program
!	Record motor positions for later recall with “x”,”y” commands
rsm	Run save memory (saves setup/ program values to nonvolatile memory)
res	Software reset controller
del	Delete last command
[i1,i2...]	Send data to Slave through Master (two VXM controllers connected by VXM bus)
setD0	Set VXM back to factory defaults (All programs, settings, motor selections will be erased)
PMx	Select Program number x, x= 0 to 4
PM-x	Select and clear all commands from Program number x, x= 0 to 4

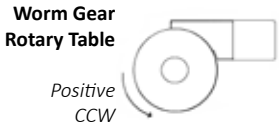
VXM Immediate Commands (continued)

Status request commands:	
V	Verify Controller's status, VXM sends "B" to host if busy, "R" if ready, "J" if in the Jog/slew mode, or “b” if Jog/slewing
X	Send current position of motor 1 to host (Motor can be in motion)
Y	Send current position of motor 2 to host (Motor can be in motion)
Z	Send current position of motor 3 to host (Motor must be stationary)
T	Send current position of motor 4 to host (Motor must be stationary)
M	Request Memory available for currently selected program
lst	List current program to host (ASCII text)
x	Send last 4 positions of motor 1 to host that were captured by the “!” command or Input 4 trigger
y	Send last 4 positions of motor 2 to host that were captured by the “!” command or Input 4 trigger
#	Request the number of the currently selected motor
*	Request the position when the last motor started decelerating (shows position when "D" command or Stop/User input 4 used)
?	Read state of limit switch inputs for motor 1 and 2 (8 bit binary value)
~	Read state of User Inputs, Motor 1 and 2 Jog Inputs (8 bit binary value)
$	Read state of User Outputs (8 bit binary value)
@	Read user analog input value
B	Read Backlash compensation setting
O	Read Indicate limit switch setting
D	Read/Digitize motor position (Jog Mode)
PM	Request the number of the current Program
PMA	Request the current program associate number (255= default/ disabled)
getMmM	Read motor type/size selected for axis m
getDM	Read operating mode of VXM
getD0	Gets the VXM’s firmware version in the format X.XX
getD1	Gets the VXM’s firmware date code in the format XX-XX-XX (month,day,year)
getD2	Returns 2 if system is a single VXM, returns 4 if VXM is a Master
getDA	Read Analog Joystick Deadband setting
getjmM	Read first Jog Speed setting for motor m
getjAmM	Read first Analog Joystick range setting for motor m
getJmM	Read second Jog Speed setting for motor m
getJAmM	Read second Analog Joystick range setting for motor m
getLmM	Read mode of limits for motor m
getPmM	Read “Pulse Every x # Steps” value for axis m
getPA	Read Pulse width used by **setPmMx** and **U7**
getI	Read operating mode of user inputs

VXM™ - Command Summary (continued)







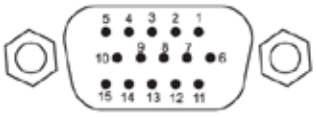
Lead Screw Models							
UniSlide® *			BiSlide®**	XSlide™***	Advance per Revolution	Advance Per Step	Speed
					Units	Units	@ 1000 SPS (2.5 rev/sec)
C	CE	P40	E25	E25	0.025 inch	0.0000625 inch	0.0625 inch/sec
B	BE	P20		E50	0.05 inch	0.0001250 inch	0.125 inch/sec
W1	W1E	P10	E01	E01	0.100 inch	0.0002500 inch	.025 inch/sec
W2	W2E	P5	E02	E02	0.200 inch	0.0005000 inch	0.5 inch/sec
W4		P2.5	E04	E04	0.400 inch	0.0010000 inch	1 inch/sec
K1	K1M	Q1	M01	M01	1 mm	0.0025 mm	2.5 mm/sec
K2	K2M	Q2	M02	M02	2 mm	0.0050 mm	5 mm/sec
			M10 (Belt)		100 mm	0.25 mm	250 mm/sec
Rotary Tables			Gear Ratio				
B4872			72:1		5 degrees	0.0125 degree	12.5 degree/sec
B4836			36:1		10 degrees	0.0250 degree	25 degree/sec
B4818			18:1		20 degrees	0.0500 degree	50 degree/sec
B5990			90:1		4 degrees	0.0100 degree	10 degree/sec

* Typical UniSlide model (where X is from above table) = MA4024x-S4
** Typical BiSlide model (where X is from above table) = MN10-0100-x-21
*** Typical XSlide model (where X is from above table) = XN10-0100-x-21

To convert from "real" units to steps, divide the distance desired to move by the Advance Per Step. (Distance ÷ Advance Per Step = Steps)

VXM Motor Setting

X	Motor Model (Amps)
0	Default (0.4 A to 0.7 A)
1	Vexta PK245 (1.2 A)
2	Slo-Syn M061 (3.8 A)
3	Slo-Syn M062 (4.7 A) Vexta PK264 (3 A)
4	Slo-Syn M063 (4.6 A) Vexta PK266 (3 A)
5	Slo-Syn M091 (4.7 A) Vexta PK268 (3 A)
6	Slo-Syn M092 (4.7 A) Vexta PK296 (3 A)



Pin #	Name
1	0V
2	+5V
3	Ain
4	Run
5	I1
6	I2
7	I3
8	I4

Pin #	Name
9	0V
10	J1-
11	J1+
12	J2-
13	J2+
14	O1
15	O2