

Odyssey Command Set

6/11/2015

I) Overview

The common syntax for several commands is:

- Each command to prober is terminated with <LF> (ASCII 10)
- Each prober response is terminated with <LF> or EOI (GPIB End-Of_Information)
- For non-query commands, prober responds with MC<LF> after command has been completed successfully (after the prober has finished and is ready for next command). Prober issues MF<LF> if an error occurred.
- Prober response is unique for each query command
- Units for X and Y moves and dimensions are mils or microns
- X and Y move and dimensions values syntax is floating point
- Positive X values move the stage towards the left
- Positive Y values move the stage towards the front

II) Commands

Command	Description	Example (T=Tester, P=Prober)
?A,?A0,?A1	Query command that returns hot chuck temperature if it is present and enabled.	T: ?A<LF> P: AT50.0<LF>
?C	Query command that returns handler status. Returned syntax is: CPnLnSnRnWs, where n=0 if not true: <ul style="list-style-type: none"> • Pn, n=1 if wafer on chuck is profiled, aligned, and probed. • Ln, n=1 if unprocessed wafers available in any cassette prealigner. • Sn, n=1 if one or more wafer available in sender cassette • Rn, n=1 if one or more wafers available in receiver cassette • Ws, s is ID of wafer on chuck top. 	T: ?C<LF> P: CP0L1S1R1W2<LF>
?E	Query command that returns global error status. 0 – no error, 1 - error	T: ?E<LF> P: E1<LF>
?H	Query command that returns absolute motor position of stage in machine coordinates from harbor position. Returned syntax is: HxxYy	T: ?H<LF> P: HX0453Y-780<LF>
?I	Query command that returns three values: wafer center, first die position, and wafer diameter. Returned syntax is: Xx1Yy1Xx2Yy2Dd, where <ul style="list-style-type: none"> • Xx1 and Yy1 is the first die position in machine coordinates • Xx2 and Yy1 is the center of chuck or wafer • Dd is diameter of wafer via profiler 	T: ?I<LF> P: X0045Y-4000X0Y0D8000<LF>
*IDN?	Query command that returns NexGen software version	T: *IDN?<LF> P: NexGen_1.6.3.2<LF>
ID	Query command that returns NexGen software version	T: *IDN?<LF> P: NexGen_1.6.3.2<LF>
?NGC	Returns details for current recipe. Syntax is NGCs,u,w,n1,n2,x,y,a,p,m,o: <ul style="list-style-type: none"> • s is name of device file to create • u is units: M (metric) or E (English) • w is wafer size in mm: 25,50,75,100,125,150,200,300,450 • n1 is notch angle of wafer on chuck: 0 to 359 • n2 is notch angle for OCR: 0, 90, 180, 270 • x,y are die/align size in mils or microns • a is 1 if auto align enabled, 0 if not, 2 if leave as default • p is 1 if profiler enabled, 0 if not, 2 if leave as default • m is 1 if material handling enabled, 0 if not, 2 if leave as default • o is 1 if OCR is enabled, 0 if not, 2 if leave as default 	T: NGC? <LF> P: demow,M,150,345,90, 1004.5,2300.0,1,1,1,2<LF>
?NGF	Returns when prober is at first site and ready to start testing. Returns NGF0 if not at first site and first pressed, NGF1 if so.	T: ?NGF<LF> P: NGF1<LF>

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?NGPOS	Returns last probing position. Used during production run.	T: ?NGPOS<LF> P: TSX2Y-4<LF>
?NGWI	Returns lot number (L), device number (D) and wafer ID (W). All values are tab delimited (\t).	T: ?NGWI<LF> P: NGWI<\t>L<\t>D<\t>W<LF>
?O	Returns string detailing options on prober. Return syntax is: OMnAnPnBnSnWnHnTnDnKn, where: <ul style="list-style-type: none"> • M1= material handling enabled, M0=disabled • A1= auto alignment enabled, A0=disabled • P1= profiler enabled, P0=disabled • B1= wafer ID reader enabled, B0=disabled • S1= SECS protocol enabled, S0=disabled • W1= wafer mapping enabled, W0=disabled • H1= hot chuck enabled, H0=disabled • T1= automatic temperature compensation enabled, T0=disabled • D1= ink dot inspection enabled, D0=disabled • K1= probe mark inspection enabled, K0=disabled 	T: ?O<LF> P: OM1A1P1B0S0W0H0T0D0K0<LF>
?P	Query command that returns X and Y die coordinate. Return syntax is XxYy.	T: ?P<LF> P: X-315Y10<LF>
?R	Query command that returns probers state variables. Return syntax is: RCnSnFbRbWbPbEbAb, where: <ul style="list-style-type: none"> • Cn is run code of prober, where Cn of: <ul style="list-style-type: none"> • C0=system is idle • C1=prober is find target • C2=prober is align scan • C3=prober is probe on wafer • C4=prober is autoprobe • C5=prober is up/down loading memory • C6=prober is in test cycle • C7=prober is initializing • Sn is run subcode, where Sn of: <ul style="list-style-type: none"> • S0=system is waiting for commands • S1=prober is unloading • S2=prober is loading • S3=prober auto aligning • S4=prober is align scan • S5=prober is profiling • S6=prober is pre-aligning • S7=prober is probing a wafer • S8=prober is busy (after keypress) • S9=procedure has been aborted • S10=prober is doing disk transfer • S11=prober is HIO transfer • F1=first die is set, F0=it is not set • R1=reference is stored, R0=it is not stored • W1=wafer is on chuck, W0=it is not on chuck • P1=wafer is profiled, P0=it is not • E1=wafer is edge profiled, E0=it is not • A1=wafer is autoaligned, A0=it is not 	T: ?R<LF> P: C0S0F1R1W1P1E0A1<LF>
?S	Query command that returns prober status. Return syntax is SZaWnCn, where: <ul style="list-style-type: none"> • ZU = chuck is up, ZD = chuck is down • W1 = wafer is on chuck, W0 = no wafer is on chuck • C0 = edge sensor contact off, C1 = edge sensor contact on <p>When using Z-travel mode with profiler, then C1 indicates current die is within wafer boundary and C0 indicates that it is not. This option is used in RDS DOS to revert stage direction when wafer</p>	T: ?S<LF> P: SZUW1C1<LF>

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	mapping.	
?T	Returns theta position in degrees*1000	T: ?T<LF> P: T1320<LF> (chuck is rotated 1.320 clockwise)
?W	Returns the wafer ID read by an OCR or bar code reader. If one doesn't exist, prober returns count starting at 1 of wafers loaded for this cassette. Return syntax is Ws, where s is wafer ID.	T: ?W<LF> P: W34BBC<LF>
?Z0	Query command that returns current stage height. Returns Zn where n is in mills units.	T: ?Z0<LF> P: Z260<LF>
AA	Prober executes auto alignment of wafer and moves to first die.	T: AA<LF> P: MC<LF>
AAF0	Prober executes auto alignment and stays in camera area	T: AAF0<LF> P: MC<LF>
AAF1	Prober executes auto alignment and moves to first die	T: AAF1<LF> P: MC<LF>
CE	Clears the alarm or light on the prober.	T: CE<LF> P: MC<LF>
CP	Instructs prober to clean the probe tips. Prober responds once it has finished.	T: CP<LF> P: MC<LF>
CT	Instructs prober to move probes under metal short plate so that tester can execute short test.	T: CT<LF> P: MC<LF>
HO	Stage is sent to home position.	T: HO<LF> P: MC<LF>
HW	Unloads wafer from stage (if one exists), loads next wafer, auto aligns, profiles, and sets at first site. Wafer ID read occurs too if that option exists. Not used by Reedholm at this time.	T: HW<LF> P: MC<LF>
IKn	Fires inker based upon n as bit coded, where n of means: <ul style="list-style-type: none"> • 0 = no inker fired, die pass • 1 = fire inker 1, die fail • 2 = fire inker 2, die fail • 3 = fire inker 1 & 2, die fail • 4 = fire inker 3, die fail • 8 = fire inker 4, die fail 	T: IK0<LF> P: MC<LF>
LAn	Prober turns the microscope lamp on or off based upon n, where n=0 means lamp on and n=1 means lamp off.	T: LA0<LF> P: MC<LF>
LFs	Loads wafer device file on prober based upon contents of s. Wafer product name is not case sensitive. Returns MF if file not found. Doesn't load Z height. (Use NGW instead if Z height information is needed)	T: LFdemowafer<LF> P: MC<LF>
LO	Load the wafer onto the stage, unloading an existing wafer if it exists. Usually used to load first wafer in a cassette.	T: IK0<LF> P: MC<LF>
MAXxYy	Moves forcer to absolute position	T: MOX235Y56<LF> P: MC<LF>
MDXxYy	Index (die) moves. Only send X and Y as integers. Same coordinates as absolute moves (MM).	T: MDX2Y5<LF> P: MC<LF>
MEs	Issue activity message, s to prober for it to display on its screen. An empty s clears the last message.	T: MEhello<LF> P: MC<LF>
MFn	Move the stage to the first die site. MF0 – (or MF) move to first die and Z up MF1 – move to first die but don't Z up	T: MF<LF> P: MC<LF>
MMXxYy	Move the stage relative in mills or microns from its present position.	T: MMX301.0Y-45.1<LF> P: MC<LF>
MOXxYy	Moves in absolute die steps	T: MOX10Y-2<LF> P: MC<LF>
MTt	Rotate chuck relative in degrees*1000	T: MT-1800<LF> (rotate chuck 1.8 degrees counterclockwise) P: MC<LF>
MZz	Moves stage to a specific Z height	T: MZ2800<LF> P: MC<LF>

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Command	Description	Example (T=Tester, P=Prober)
NJS	Enables/Disables joystick. 0 – automatic (NexGen will decide when to disable joystick) 1 – always enabled 2 – always disabled	T: NJS1<LF> P: MC<LF> (enables joystick)
NGA	Saves current elevation profile to a specified file location.	T: NGAC:\profiles\pr1.txt<LF> P: MC<LF>
NGC	Creates a new wafer device file named s. Returns MF if it cannot create the new file. Following settings are downloaded from tester, with rest of them being copied from user set defaults. Syntax is NGCs,u,w,n1,n2,x,y,a,p,m,o: <ul style="list-style-type: none"> • s is name of device file to create • u is units: M (metric) or E (English) • w is wafer size in mm: 25,50,75,100,125,150,200,300,450 • n1 is notch angle of wafer on chuck: 0 to 359 • n2 is notch angle for OCR: 0, 90, 180, 270 • x,y are die/align size in mils or microns • a is 1 if auto align enabled, 0 if not, 2 if leave as default • p is 1 if profiler enabled, 0 if not, 2 if leave as default • m is 1 if material handling enabled, 0 if not, 2 if leave as default • o is 1 if OCR is enabled, 0 if not, 2 if leave as default 	T: NGCdemow,M,150,345,90,1004.5,2300.0,1,1,1,1,2<LF> P: MC<LF>
NGI	Prober performs linearity measurement.	T: NGI<LF> P: MC<LF>
NGHn	Enables use of partial wafers. 0 – disable, 1 – enable	T: NGH1<LF> P: MC<LF>
NGGn	Redraws wafer map enabling only half of it. 0 – no changes 1 – up half enabled 2 – left half enabled 3 – bottom half enabled 4 – right half enabled 5 – entire wafer enabled	T: NGG3<LF> P: MC<LF> (enabled bottom part of the wafer for probing)
NGFn	Find beacon number n. Used in “blue tape” type of probing	T: NGF1<LF> P: MC<LF>
NGL	Loads / unloads wafer without user pop-up messages 1 – load starts (forcer moves to home position and vacuum is off) 2 – load finishes (forcer moves to home position, vacuum is on, wafer presence is checked) 3 – unload starts (forcer moves to home position and vacuum is off) 4 – unload finishes (forcer moves to home position, vacuum is off, wafer presence is checked)	T: NGL1<LF> P: MC<LF> (starts loading) T: NGL2<LF> P: MC<LF> (signals to xGen application that loading is complete)
NGP	Saves current image in PNG format to a specified file location.	T: NGPC:\images\img.png<LF> P: MC<LF>
NGQ	Remove “First die set” flag	T: NGQ<LF> P: MC<LF>
NGR	Realign and go to last good die	T: NGR<LF> P: MC<LF>
NGS	Saves results map to the default folder	T: NGS<LF> P: MC<LF>
NGWs	Loads wafer device file on prober based upon contents of s. Wafer product name is not case sensitive. Returns MF if file not found. WARNING! In limits mode this function also loads “Z up” position and considers “Z up” to be set.	T: NGWmyWafer<LF> P: MC<LF>

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NGYn	Enables / disables linearity measurements	T: NGY1<LF> (Enable linearity measurements) P: MC<LF>
NGZe	Disables / enables protected moves. If protection is disabled chuck wouldn't drop down on moves. Should only be used without probe card present.	T: NGZ0<LF> (disable protection) P: MC<LF>
NMAXxYy	Move chuck to an absolute XY position. Moves are in machine steps. One step is 20/512 mills.	T: NMAX10000Y23000<LF> P: MC<LF>
NMDXxYy	Index (die) moves with optical correction for "blue tape" type of probing. Only send X and Y as integers.	T: NMDX1Y-1<LF> P: MC<LF>
NPD	Enables / disables pop-up messages in xGen application. . If pop-up messages are disabled any operation which requires user input will return "False" value (equal to operator pressing "Cancel" button). 0 – enable pop-up messages 1 – disable pop-up messages	T: NPD1<LF> P: MC<LF> (disables pop-ups)
NSM1	Enables / disables auto loading.	T: NSM1L1<LF> (enable auto loading) P: MC<LF>
NSP1	: Sets scrub's Z up position in 1/10 mills increments	T: NSP1Z2815<LF> P: MC<LF> (sets scrub's Z up position to 28.15 mills)
NSP2	Sets first die at a current location. Functionality is equal to operator pressing "Set first die" on joystick panel.	T: NSP2<LF> P: MC<LF>
NXGETPROFILE N	Returns profiler information in the format: X1n.nY1n.nZ1n.n;X2n.nY2n.nZ2n.n; and so on Units are mils for both XY and Z positions regardless the measurement system used in NexGen. X and Y coordinates are offset from the center of the wafer. Z is relative elevation difference. N defines the number of profile. NexGen stores up to 5 most recent profile measurements. NOTE! there is a space between NXGETPROFILE and N	T: NXGETPROFILE 0<LF> P: X1000.1Y1000.0Z0.1; X-1000.1Y1000.0Z0.2; X-1000.1Y-1000.0Z0.1; X0.0Y0.0Z0.5; X1000.1Y-1000.0Z0.4;<LF>
NXSETPROFILE X1n.nY1n.nZ1n.n; X2n.nY2n.nZ2n.n;	Sets profiler information in the format: X1n.nY1n.nZ1n.n;X2n.nY2n.nZ2n.n; and so on Units are mils for both XY and Z positions regardless the measurement system used in NexGen. X and Y coordinates are offset from the center of the wafer. Z is relative elevation difference. NOTE! there is a space between NXSETPROFILE and data	T: NXSETPROFILE X1000.1Y1000.0Z0.1; X-1000.1Y1000.0Z0.2; X-1000.1Y-1000.0Z0.1; X0.0Y0.0Z0.5; X1000.1Y-1000.0Z0.4;<LF> P: MC
PH	Set probing Z height. Can be only set in microscope area. If this command is used in alignment camera area it will set camera focus height. If used in profile mode system sets Z height corresponding to the center of the probe area.	T: PH3000<LF> P: MC<LF>
PR	Start production	T: PR<LF> P: MC<LF>
PZ	Prober profiles wafer on the stage.	T: PZ<LF> P: MC<LF>
SA	Sets the alarm or light on the prober.	T: SA<LF> P: MC<LF>
SM1	Sets units 0 – English, 1 - Metric	T: SM1U1<LF> P: MC<LF>
Command	Description	Example (T=Tester, P=Prober)
SM2	Sets scanning direction similar to Scan Directions in Wafer	

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	editor. Only four settings are accessible using this command: 1 – start quadrant one and move left 2 – start quadrant two and move right 3 – start quadrant three and move right 4 – start quadrant four and move left	T: SM2Q2<LF> P: MC<LF>
SM3	Sets wafer flat position. 0 Flat is facing front toward operator 90 Flat is facing left 180 Flat is facing away from operator 270 Flat is facing right	T: SM3F0<LF> P: MC<LF>
SM4	This command doesn't do anything and always returns MC. Required to support some older software.	T: SM4C2<LF> P: MC<LF>
SM5	Sets Z travel mode: 0 – limits 1 – edge sense 2 – profile	T: SM5E2<LF> P: MC<LF>
SM11	Sets coordinate quadrant. Q ranges from 0 to 3	T: SM11Q0<LF> P: MC<LF>
SM15	Disables responses for "action" class messages	T: SM15M000<LF> P: MC<LF>
SP1	Sets X and Y die sizes. If units are English then arguments are sent in 1/10 mills increments. If units are Metric arguments are sent in microns	T: SP1X105Y905<LF> P: MC<LF> (sets die size to 10.5 by 9.5 mills)
SP2	Set temporary first die	T: SP2X1Y1<LF> P: MC<LF>
SP4	Set wafer diameter in mm	T: SP4150<LF> P: MC<LF>
SP5	Sets over travel in 1/10 mills increments	T: SP5Z10<LF> P: MC<LF> (sets over travel to 1 mill)
SP6	Sets Z clearance in 1/10 mills increments	T: SP6C200<LF> P: MC<LF> (sets clearance to 20 mills)
SP7	Sets upper Z software limit in 1/10 mills increments	T: SP7Z4000<LF> P: MC<LF> (sets upper Z limit to 400 mills)
SP8	Sets lower Z software limit in 1/10 mills increments	T: SP7Z2000<LF> P: MC<LF>
SP11	Sets inker delay to zero	T: SP11<LF> P: MC<LF> (this command is ignored)
SP20	Sets inker pulse width	T: SP20P15<LF> P: MC<LF> (sets pulse width to 15 ms)
SX1Bn	Enables temperature compensation 1 – enable 0 – disable	T: SX1B1<LF> P: MC<LF> (Enable temp comp)
SX2Cn	Sets platen X temperature expansion coefficient in parts per million (ppm) * 10	T: SX2C135<LF> P: MC<LF> (Set X coeff to 13.5 ppm)
SX3Cn	Sets platen Y temperature expansion coefficient in parts per million (ppm) * 10	T: SX3C135<LF> P: MC<LF> (Set Y coeff to 13.5 ppm)
SX4Cn	Sets wafer X temperature expansion coefficient in parts per million (ppm) * 10	T: SX4C25<LF> P: MC<LF> (Set X coeff to 2.5 ppm)
SX5Cn	Sets wafer Y temperature expansion coefficient in parts per million (ppm) * 10	T: SX5C25<LF> P: MC<LF>

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		(Set Y coeff to 2.5 ppm)
SX6Tn	Sets platen temperature difference in degrees	T: SX6C20<LF> P: MC<LF> (Set platen dT to 20 degrees)
SX7Tn	Sets wafer temperature difference in degrees	T: SX7T30<LF> P: MC<LF> (Set wafer dT to 30 degrees)
TC	Test complete command sent by tester after electrical test is complete. Prober will move to next die and respond with either TS or TSXxYy when ready. At the last die prober returns PC instead of TS.	T: TC<LF> P: TSX0Y3<LF>
UL	Unload the wafer to the cassette w/o loading a new wafer. Used to unload the last wafer in a cassette.	T: UL<LF> P: MC<LF>
ZD	Lower stage so that probes are not in contact with wafer.	T: ZD<LF> P: MC<LF>
ZM	Moves stage to a specified Z height. Z is in mill*10	T: ZM2300<LF> (chuck will go to Z height of 230.0 mills) P: MC<LF>
ZU	Raise stage so that probes are in contact with wafer.	T: ZU<LF> P: MC<LF>
--END--		