Error Strings

Error Code	Error Strings
10	"Slave absent"
20	"X position error"
21	"Y position error"
22	"Z position error"
23	"Homing error"
24	"X < minimum X"
25	"X > maximum X"
26	"Y < minimum Y"
27	"Y > maximum Y"
28	"Z < minimum Z"
29	"Z > maximum Z"
30	"X encoder fault"
31	"Y encoder fault"
32	"Z sensor fault"
33	"Safety activated"
34	"Invalid Z speed"
39	"Stop pressed"
99	"Unlisted motor error"
0	"Unknown error"

External GSIOC Commands

Command	Type	Private	Description
%	I		Returns the character string: "223Vx.yz", where x, y, and z identify the software version for the sample changer.
$	I		Returns a "$" and resets the sample changer to its power-up state.
@	I		Reads non-volatile memory (NV-RAM) at current address. Returns "AA=xxxx" where: AA - Value is the address (0 - 39). Xxxx - Data at the address.
@*AA*[=*xxxx*]	B		Sets the value at NV-RAM address where: AA-Value is the address (0 - 39). xxxx-(Optional) Data at the address.
~*n*	BI		Sets test mode. Indicate one of the following for n: 1 - Performs XYZ test. **Must be run without needle from the home position.** 9 - Resets NV-RAM and initializes to defaults.

<table>
<tr><td>9</td><td>I</td><td></td><td>Reads contact input event FIFO. If the queue is empty, “|000000” is returned. If the queue is not empty, returns “Xttttt” where:

X - State of the four contact inputs: 1 for closed, 0 for open. See table below.

ttttt - Time in 10 ms units since the last buffered 9 command.

<table>
<tr><th>if X=then</th><th>A=</th><th>B=</th><th>C=</th><th>D=</th></tr>
<tr><td>@</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>A</td><td>1</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>B</td><td>0</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>C</td><td>1</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>D</td><td>0</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>E</td><td>1</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>F</td><td>0</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>G</td><td>1</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>H</td><td>0</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>I</td><td>1</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>J</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>K</td><td>1</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>L</td><td>0</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>M</td><td>1</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>O</td><td>0</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>P</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>9</td><td>B</td><td></td><td>Clears the contact event FIFO and resets the contact input event timer.</td></tr>
<tr><td>a</td><td>I</td><td></td><td>Returns X travel length in Kilometers.</td></tr>
<tr><td>b</td><td>I</td><td></td><td>Returns Y travel length in Kilometers.</td></tr>
<tr><td>c</td><td>I</td><td></td><td>Returns Z travel length in Kilometers.</td></tr>
<tr><td>e</td><td>I</td><td></td><td>Reads the current error number. Returns “n” which identifies the error number; see page 5-1 for listing of errors. If no error has occurred, returns 0.</td></tr>
<tr><td>e</td><td>B</td><td></td><td>Clears error number.</td></tr>
<tr><td>Exyz H</td><td>B</td><td></td><td>Sets X, Y, and Z motor status:

X - 0 for disable or 1 for enable X motor.
Y - 0 for disable or 1 for enable Y motor.
Z - 0 for disable or 1 for enable Z motor.

For example, the following command disables the motors: E000.</td></tr>
<tr><td>H</td><td>B</td><td></td><td>Moves needle to home position.</td></tr>
</table>

I	I		Reads status of input contacts. Returns "cccc" where: cccc - Status of input contacts A, B, C, D: 1 if the contact is closed (shorted), 0 if open.
J	I		Reads status of output contacts and +12 V external auxiliary power. Returns "ccccp" where: cccc - Status of output contacts 1, 2, 3, and 4: 1 if the output is connected, 0 if disconnected. P - Status of +12 V external auxiliary power: 1 if connected, 0 if disconnected. Auxiliary power is off when sampler changer is turned on.
J*cccc*[*p*]	B		Sets status of output contacts and +12 V external auxiliary power. Cccc - Output contacts 1, 2, 3, and 4: 1 to connect, 0 to disconnect, X for no change. P - (Optional) Auxiliary power: 1 to connect, 0 to disconnect, X for no change.
j*c[ttt]*	B		Pulses an output contact: c - Number of the output contact, 1 - 4. ttt - Duration of the pulse in tenths of seconds; default is 1.
L*x*	B		Sets liquid level sensing threshold frequency based on current frequency and data at NV-RAM frequency threshold field. x - H for high frequency setting or L for low frequency.
M	I		Reads X, Y, Z motor status. Returns "xyz". For each motor status, you see "U" for unpowered, "P" for powered, "R" for running, or "E" for error.
n	I		Reads the actual frequency of liquid level detector oscillator. Returns "ffff" which is frequency in Hz.
N	I		Reads the liquid level detector output. Returns "Iffff" where: I - A for air or L for liquid. Ffff - Current sensitivity threshold frequency in Hz.
N*ffff*	B		Sets the liquid level sensing threshold frequency (ffff) in Hz.

P	I		Reads the XYZ position in tenths of millimeters, based on the internal encoder wheel.
S	I		Reads the command in the synchronization buffer. Returns "|" if buffer is empty.
Smm	B		Sends a synchronized buffered command (mm) that is executed when the sample changer is quiescent. Sending a command can overwrite unexecuted, existing commands. If you send this command without indicating a parameter (mm), the buffer is cleared.
vzzzz,sss	B		For tracking liquid height, raises or lowers the Z height of the needle at the designated speed:
V	I		Reads diverting valve status. Returns one of the following: 0 - Valve status off; the port connected to the needle is the one facing the rear of the sample changer. 1 - Valve status on; the port connected to the needle is the one facing you.
Q	I		Reads the Z travel range. Returns "min - max" where: