3 characters for the action code.

1 character for the conveyer and vacuum processes.

7 characters for each of the following: joint angle, initial x, initial y, initial z, initial theta, final x, final y, final z, final theta. First character is for the sign, second to fourth character are the digits before floating point, fifth character is the floating point, and sixth to seventh are the digits after floating point.

Each section is followed by a hash.

Total number of characters is 3+1+7x9+11 = 78

Sections that aren’t required in the command is filled with the character ‘X’.

String message = [Action] # [Conveyer/Vacuum] # [Joint Angle] # [Initial X] # [Initial Y] # [Initial Z] # [Initial Theta] # [Final X] # [Final Y] # [Final Z] # [Final Theta] #

Example

Str = ‘S01#X#XXXXXXX#+123.45#-678.90#+400.00#-090.00#-543.21#+098.76#+200.00#-045.00#’

|  |  |
| --- | --- |
| Action number | Action |
| 1 | Joint 1 Jog |
| 2 | Joint 2 Jog |
| 3 | Joint 3 Jog |
| 4 | Joint 4 Jog |
| 5 | Joint 5 Jog |
| 6 | Joint 6 Jog |
| 7 | Conveyer Power |
| 8 | Conveyer Direction |
| 9 | Vacuum Power |
| 10 | Vacuum Grip |
| 11 | Pause/Play |
| 12 | Table to Table Movement |
| 13 | Table to Flip Movement |
| 14 | Flip Retrieval to Table |
| 15 | Table to Conveyer |
| 16 | Conveyer to Table |