Zürich Actuator Command Set
Version 2.03

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General comments

- All commands are case sensitive.
- All commands need to be completed correctly within 2 seconds, starting from entry of the first character. Failure to do so results in actuator reset.
- An actuator reset does not change its position but only resets the internal state machines.
- Switching DEBUG-mode on/off influences the amount of data being returned by an actuator.
- All number entries are hexadecimal (0..9,A..F).
- All return messages terminate with 0x0D 0x0A (CR LF).

Format of position frame

aabb ccdd eeff gghh ii jj kk (CR LF)

aabb, ccdd, eeff, gghh: 16-bit hexadecimal values of ADC sensors [1..4]
ii: mm value of position (hexadecimal)
jj: sub-mm value of position (multiples of $1/256^{th}$ mm, hexadecimal)
kk: index of dominant hall sensor for position determination [1..4]
                     (internally not used anymore, kept for legacy purposes)

Command Syntax	Description	Return value (DEBUG mode ON/OFF)
l	drive one step inwards (5 um)	position frame / none
L	drive one turn inwards (1 mm)	position frame / none
r	drive one step outwards (5 um)	position frame / none
R	drive one turn outwards (1 mm)	position frame / none
C	Cycle: drive 3 mm inwards, then 3 mm outwards	position frame / none
<	Drive inwards until jammed or character received	After each step: position frame / none
>	Drive outwards until jammed or character received	After each step: position frame / none
Pxxyy	Programmed drive: goto position xxyy with xx being in units of 'mm' and yy in units of $1/256^{th}$ of 1 mm.	position frame / none
#	Re-calibrate actuator: drive all inwards until mechanical limit rewrite internal lookup table (LUT)	Calibration progress
V	Print version number	'AMC Control, C Firmware 2.03 08/2012'
Dxx	Set stepper motor delay to xx ms	'Delay: xx ms'
d	Read back stepper motor delay	'Delay: xx ms'
Mxxyyzz	Write elevation lookup table: xx: elevation angle (integer) yy: actuator position (mm value) zz: actuator position ($1/256^{th}$ of 1 mm)	'Verify: xx yy zz'
mxx	Read back elevation lookup table: xx: elevation angle (integer)	'Verify: xx yy zz' (yy zz being of same format as for writing the elevation table)
T	Read internal temperatur of actuator	'+25.5' (example)
Gxx	goto position associated with elevation angle xx from elevation lookup table	position frame / none
!	Toggle DEBUG mode	'DEBUG ON'/'DEBUG OFF'
p	Print current position	Position frame
$	Binary memory dump of elevation lookup table	180 characters, 2 characters each for elevation entries 0 .. 89 deg