Motion Controller Programming Guide

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Communication Input Properties

Full Command Syntax : <TASK> <OBJECTIVE> <AXIS> <VALUE>

Total Characters expected PER PARAMETER < 30

Command termination : Carriage return followed by line feed '\r\n'

Timeout = 1 second

Commands

1. Getters and Setters :
    i. TASK = { "GET" ([3] arguments), "SET" ([4] arguments) }
    ii. OBJECTIVE = { "DIST", "ROT", "VEL_<OBJ_SPEC>", "ACC_<OBJ_SPEC>", ORIGIN_<OBJ_SPEC>"
    Where : OBJ_SPEC can be :
    DIST : Spatial position
    ROT : Radial position
2. Device Initialization/Removal Commands:
    i. Open Device [3]
        a) TASK = { "OPEN" }
        b) OBJECTIVE = { "NEMA17_MOTOR", "NEMA23_MOTOR", "G2_MOTOR" }
    ii. Initialize/Close Device(s)
        a) TASK = { "INIT", "CLOSE" }
        b) OBJECTIVE = { "DEV" [3], "DEV_LIST" [2] }
3. Special Commands :
    i. [1] CMD = "HELP" : Printout high level command syntax and commands
    ii. [2] CMD = "REMOVE CLIENT" : Connection with the device will be terminated.
    iii. [2] CMD = "DISPLAY COMMANDS" : List all supported commands
    iv. [3] CMD = "SET TIMEOUT <SECONDS>" : Defines connection timeout of dev

Examples

1. **Open connection** with a NEMA23 stepper motor for control
   - CMD = "OPEN NEMA23_MOTOR 2"
   - Response : The first available NEMA23 stepper motor, from its discrete pin assignment programming, will be connected to.
   - Axis Indexing : This motor will be referred to as axis 2. When motors are removed, the axis indexing remains the same.
2. **Close connection** with **axis 2**
   - CMD = "CLOSE DEV 2"
   - Assume : The controller is currently managing the operation of three precision motors.
   - Response : Axis 2 motor remains in idle. Axis 2 is free to program a new motor.
   - Axis Indexing : AXIS 1 or AXIS 3 is available for control. AXIS 2 is empty.
3. **Initialize all** precision **motors**
   - CMD = "INIT DEV_LIST"
   - Response : Initialization procedure for each axis will execute.
4. **Get rotation** of the stepper motor belonging to **axis 1**.
   - CMD = "GET ROT 1"
   - Response : The rotation of axis 3 is returned (units can vary).
5. **Set velocity** of **linear** actuator belonging to **axis 3**
   - CMD = "SET VEL_DIST 3 100"
   - Response : Sets the velocity of axis 3 to 100 units.
6. **Set acceleration** of **linear** actuator belonging to **axis 3**
   - CMD = "SET ACC_DIST 3 5"
   - Response : Sets the velocity of axis 3 to 5 units.