

Z Height Verification

Description:

Z Height Verification is a firmware option for the Smart Motion Smart Arm system. With this feature enabled, it provides the user with the capability to verify the arm is in the correct Z location window.

Modes of Operation:

1. Enabled: with this mode selected in the Maintenance menu, every point taught will have an associated target X,Y and Z location.
2. Per Point: with this mode selected in the Maintenance menu, for each point taught, the programmer has the option to teach a Z location as well.
3. Disabled: the arm will verify the correct X,Y location only.

Enabling Z Height Verification:

1. The Smart Arm Controller must be programmed internally for the Z Height Verification option.
2. Login to the Maintenance menu
3. Scroll through the Maintenance menu until "Z Ver", press the jog dial.
4. Scrolling through the menu options:
 - a. "PER PNT" enables the programmer to decide during TEACH if the Z height is to be verified or not.
 - b. "ALL" enables Z height verification for every point
 - c. "CANCEL" exits the menu
 - d. "DISABL" will disable the Z height verification tracking

5. Scroll through the Maintenance menu until "Z TOL", press the jog dial.
 - a. The Z Tolerance setting range is 0.0-99.5mm. This sets the +/- Z height window for the Z height verification. This is NOT the actual physical Z Height Tolerance capability of the arm. The arm "play", SetOrg Error and repeatability need to be taken into account when determining the setting for Z Tolerance. It is recommended that this number be set at 2mm or more. This setting applies to all taught Z points.
6. Scroll through the Maintenance menu until "TRGTTM", press the jog dial.
 - a. The TRGTTM is the Z height verification trigger timer. The timer range is 0 – 990 ms in 10 ms increments. Z height is continuously monitored. In addition to having the X,Y locations met, the arm needs to be held in the target Z height window for the length of time set on the TRGTTM to generate an OK signal. This prevents erroneous "OK" signal when passing through the target Z window. This setting applies to all taught Z points.

TEACHING with Z Height Verification:

The Z Height Verification can be used for both Torque and Sequence Mode in either the "PER PNT" or "ALL" Z height verification modes.

TEACH in **Torque** Mode – "PER PNT":

1. At TEACH, the program will walk you through the following sequence:
 - a. PNT (flashing point number can be dialed in), push jog dial to set
 - b. TQ (flashing torque program number can be dialed in), push jog dial to set
 - c. Z VER (flashing N/Y can be dialed in to perform Z height verification at this point), push jog dial to set

TEACH in **Torque** Mode – “**ALL**”:

1. At TEACH, the program will walk you through the following sequence:
 - a. PNT (flashing point number can be dialed in), push jog dial to set
 - b. TQ (flashing torque program number can be dialed in), push jog dial to set

TEACH in **Sequence** Mode – “**PER PNT**”:

1. At TEACH, the program will walk you through the following sequence:
 - a. SEQ (flashing sequence number can be dialed in), push jog dial to set
 - b. TQ (flashing torque program number can be dialed in), push jog dial to set
 - c. Z VER (flashing N/Y can be dialed in to perform Z height verification at this point), push jog dial to set

TEACH in **Sequence** Mode – “**ALL**”:

1. At TEACH, the program will walk you through the following sequence:
 - a. SEQ (flashing sequence number can be dialed in), push jog dial to set
 - b. TQ (flashing torque program number can be dialed in), push jog dial to set